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THE FISHERIES OF THE PACIFIC COAST.

By William A. Wilcox,

Statistical Agent, United States Commission of Fish and Fisheries.

GENERAL REMARKS.

In the years 1888 and 1889 the writer conducted a personal canvass of the fisheries of the Pacific Coast of the United States. Detailed statistics of the fishing industry were obtained, and descriptive notes on the history, apparatus, and methods of the fisheries, the abundance of the economic products, the fishing-grounds, etc., were secured. A report[1] embodying the results of that inquiry was published in the Report of the United States Fish Commissioner for 1888 and extensively distributed among the persons engaged in the fishing industry of that region.

In 1892 the rapidly growing importance of the various fisheries of the Pacific States, as determined by the investigations in 1888 and 1889, appeared to warrant further attention, and, accordingly, in August of that year, the writer was again detailed for duty on that coast for the purpose of making another investigation of the commercial aspects of the fishing industry. The inquiries began on the Columbia River and were extended over the entire coasts of Washington, Oregon, and California, the canvass being completed in May, 1893. The accompanying report is based on the observations made and information gathered during that time. The detailed references to products, apparatus, methods, fishing-grounds, etc., in the previous report make unnecessary at this time any similar discussion. The text in the present paper is, therefore, intentionally brief, and is either explanatory of the statistics or is addressed to changes that have occurred in the industry since the last investigation.

The years intervening between the two investigations will be recalled as those of more or less depression in nearly all kinds of business. A period of great commercial activity was followed by a marked decline in most branches, and many of the young cities of the west coast that had been giving employment to thousands of laborers and mechanics found their growth for the time checked. A general depression in other lines of trade has often had a beneficial effect on the fisheries. For lack

[1] Report on the Fisheries of the Pacific Coast of the United States. 269 pages; 49 plates of fishes, apparatus, boats, vessels, fishing-grounds, etc.

of other regular employment, men of small means have turned to the fisheries and thus have not only found work, but have assisted in furnishing the masses with cheap and wholesome food at a time when this was specially needed. This was the case at a number of places in the Pacific States during the later years covered by this report.

The previous report on the fisheries of this region contained a number of suggestions for the improvement of the fisheries. Among these were the much-needed use of ice, the adoption of cold storage, and the better care of fish by fishermen and dealers. In most cases the desired reforms were as conspicuous for their absence in 1892 as in 1889. Fresh fish continue to be sent to the city markets as they come from the water, seldom being eviscerated; and only a small amount of ice, if any, is used on them during transportation. When the market fishermen adopt the custom, which is almost universal in the East, of dressing and icing their catch before shipment, an increased demand and better prices may be expected, to say nothing of the advantage which will come to the consumer through having more wholesome food.

As during the previous investigations, the inquiries of the Commission were much facilitated by the courtesy of railroad, steamboat, and express companies in permitting access to their records. The fishing and canning firms of the coast took great interest in the agent's inquiries, and often extended much assistance, in addition to allowing the examination of records. The thanks of the Commission are due to the fishing interests of the west coast and also to the members of the State fish commissions for courtesies extended.

The field work on the Sacramento, San Joaquin, and Eel rivers and Monterey and San Francisco bays was ably assisted by Mr. A. B. Alexander, of the United States Fish Commission steamer *Albatross*.

CONDENSED STATISTICS OF THE INDUSTRY.

The extent of the fisheries of the Pacific Coast in 1892 is shown in the following tables, the figures for California, Oregon, Washington, and Alaska being separately given.

In the matter of persons engaged in the industry, California leads in the item of vessel fishermen, Washington in shore or boat fishermen, and Oregon in shore employees, such as factory hands, although Alaska leads in the number of shoresmen when all its canneries are in operation.

The aggregate investment in the fisheries of Alaska is greater than elsewhere, owing to the relatively expensive canneries there located and the large amount of working capital required to operate them. California takes first rank in the number, value, and tonnage of vessels employed, and also in the number of seines and gill nets used, but the seines in Washington and the gill nets in Oregon have a greater value. Oregon follows California in the amount of the general investment, and has important pound-net and wheel interests which are lacking elsewhere except in Washington.

Nearly half the value of the products of the fisheries of the coast represents the outcome of the fisheries of California. That State takes precedence in the catch of numerous market fishes, as well as cod, oysters, crabs, shrimp, fur seals, and whales. The salmon fishery is most valuable in Alaska, the yield of whose fisheries is second to those of California in value. Washington leads Oregon in the general importance of the fisheries, owing to the relatively important oyster fishery, which is insignificant in Oregon.

Persons employed in the fishing industry of the Pacific Coast of the United States in 1892.

How employed.	Alaska.	California.	Oregon.	Washington.	Total.
In vessel fisheries	331	1,825	117	376	2,649
In shore fisheries	1,020	2,968	2,705	3,082	9,775
On shore	1,533	610	1,510	852	4,505
Total	2,884	5,403	4,332	4,310	16,929

Vessels, boats, apparatus, shore property, and cash capital employed in the fisheries of the Pacific Coast of the United States in 1892.

Items.	Alaska.		California.		Oregon.		Washington.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels	40	$461,000	84	$890,450	24	$90,400	51	$114,630
Tonnage	8,623	.....	12,436.30	.....	802.83	.....	1,185.12	.....
Outfit	.....	33,400	.....	394,000	.....	20,295	.....	33,630
Boats	421	63,575	1,391	183,520	1,494	154,425	1,690	132,330
Apparatus:								
Seines	69	27,025	193	20,985	32	12,600	163	46,725
Gill nets and trammel nets	243	28,750	2,946	120,547	1,396	212,260	886	112,600
Pound nets and trap nets	16	13,200	.....	.....	247	173,400	157	124,700
Bag nets and paranzella nets	.....	.....	1,299	43,960	.....	.....	.....	.....
Fyke nets and minor nets	.....	.....	49	980	50	250	30	600
Lines	.....	4,050	.....	15,954	.....	10,520	.....	5,830
Wheels	.....	.....	.....	.....	40	132,852	17	49,000
Tongs, hoes, etc	.....	.....	.....	689	.....	149	.....	3,505
Other apparatus	.....	500	.....	13,341	.....	2,050	.....	6,217
Shore property	.....	720,650	.....	596,320	.....	660,150	.....	417,800
Cash capital	.....	1,257,500	.....	246,000	.....	803,000	.....	546,000
Total	.....	2,609,650	.....	2,526,746	.....	2,272,351	.....	1,593,567

SUMMARY.

Items.	No.	Value.	Items.	No.	Value.
Vessels	199	$1,556,480	Apparatus—continued.		
Tonnage	14,510.48	.....	Fyke nets and minor nets	129	$1,830
Outfit	.....	481,325	Lines	.....	36,354
Boats	4,996	533,850	Wheels	57	181,852
Apparatus:			Tongs, hoes, etc	.....	4,343
Seines	457	107,335	Other apparatus	.....	22,108
Gill nets and trammel nets	5,471	474,157	Shore property	.....	2,394,920
Pound nets and trap nets	420	311,300	Cash capital	.....	2,852,500
Bag nets and paranzella nets	1,299	43,960	Total	.....	9,002,314

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Products of the fisheries of the Pacific Coast of the United States in 1892.

Species.	Alaska.		California.		Oregon.		Washington.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies			150,175	$1,502				
Barracuda			326,804	12,530				
Bonito			249,332	9,400				
Carp			65,662	2,191				
Cod	2,219,835	$55,562	2,274,565	56,864			539,000	$21,560
Cultus-cod			230,670	7,070	26,304	$1,315	359,000	6,875
Flounders			4,225,885	94,180	10,000	400	184,560	3,191
Halibut					18,870	1,787	1,410,500	29,140
Herring	18,700,000	32,900	4,486,887	55,796			617,112	6,817
Mackerel			350,399	14,159				
Perch			335,117	10,927			65,140	1,303
Rockfish			1,829,657	51,765	86,115	4,255	163,000	4,515
Salmon	42,231,500	1,219,973	4,862,408	179,031	25,536,701	781,000	21,684,211	551,546
Sardines			752,994	15,237				
Sea bass			257,712	9,795				
Shad			526,494	14,372	109,000	3,270	103,350	3,183
Smelt			1,919,894	53,469			321,726	6,158
Striped bass			56,209	6,488				
Sturgeon			718,017	21,854	2,513,490	28,001	543,623	5,757
Yellow-tail			354,434	13,682				
Other fish			2,257,410	47,360			55,000	4,650
Abalone meats and shells			404,547	9,351				
Octopus and squid			374,622	29,039				
Clams, hard			479,500	6,449				
Clams, soft			2,017,200	20,433	49,560	825	684,000	5,700
Oysters			15,098,700	698,257	147,000	3,062	9,895,440	147,995
Mussels			2,880,000	12,000				
Crabs			2,862,320	102,900	4,125	495	79,000	3,550
Crawfish					20,000	3,000		
Shrimp and prawn			5,313,345	241,817			2,000	500
Spiny lobster			303,275	8,486				
Terrapin and frogs			45,625	8,050			13,125	5,250
Hair-seal and sea-lion pelts				2,267				
Fur-seal pelts		107,573		167,526		43,266		121,528
Sea-otter pelts		2,220		36,150		1,720		
Whale oil			1,574,843	62,123				
Whalebone				197,339				
Algæ				28,325				
All other products				28,100			37,500	2,350
Total	63,151,335	1,418,228	57,838,466	3,022,991	28,521,105	872,405	36,757,287	931,568

SUMMARY.

Species.	Pounds.	Value.	Species.	Pounds.	Value.
Anchovies	150,175	$1,502	Abalone meats and shells	404,547	$9,351
Barracuda	326,804	12,530	Octopus and squid	374,622	29,039
Bonito	249,332	9,400	Clams, hard	479,500	6,449
Carp	65,662	2,191	Clams, soft	2,750,700	26,958
Cod	5,033,400	123,986	Oysters	25,141,140	849,314
Cultus-cod	615,974	15,260	Mussels	2,880,000	12,000
Flounders	4,420,445	97,771	Crabs	2,945,445	106,945
Halibut	1,429,370	30,927	Crawfish	20,000	3,000
Herring	23,803,999	95,513	Shrimp and prawn	5,315,345	242,317
Mackerel	350,399	14,159	Spiny lobster	303,275	8,486
Perch	400,257	12,230	Terrapins and frogs	58,750	13,800
Rockfish	2,078,772	60,535	Hair-seal and sea-lion pelts		2,267
Salmon	94,314,820	2,731,550	Fur-seal pelts		439,893
Sardines	752,994	15,237	Sea-otter pelts		40,099
Sea bass	257,712	9,795	Whale oil	1,574,843	62,123
Shad	738,844	20,825	Whalebone	197,339	937,371
Smelt	2,241,620	59,627	Algæ	28,325	1,133
Striped bass	56,209	6,488	All other products	65,600	4,317
Sturgeon	3,775,130	55,612			
Yellow-tail	354,434	13,682			
Other fish	2,312,410	52,010	Total	186,268,193	6,245,192

in 1892.

Washington.	
Pounds.	Value.
.....	.....
.....	.....
.....	.....
539,000	$21,560
359,000	6,875
184,560	3,191
1,410,500	29,140
617,112	6,817
65,140	1,303
163,000	4,515
1,684,211	551,546
.....	.....
103,350	3,183
321,726	6,158
543,623	5,757
55,000	4,650
.....	.....
.....	.....
684,000	5,700
895,440	147,995
79,000	3,550
2,000	500
13,125	5,250
.....	.....
.....	121,528
.....	.....
.....	.....
.....	.....
37,500	2,350
757,287	931,568

nds.	Value.
04,547	$9,351
74,622	29,039
79,500	6,449
50,700	26,958
41,140	849,314
80,000	12,000
45,445	106,945
20,000	3,000
15,345	242,317
03,275	8,486
58,750	13,800
.....	2,267
.....	439,893
.....	40,099
74,843	62,123
97,339	937,371
28,325	1,133
65,600	4,317
68,193	6,245,192

Summary of the salmon-canning industry of the Pacific Coast of the United States in 1892.

States.	Persons employed.	No. of canneries.	Value.	Cash capital.	Total investment.	Salmon utilized.		Salmon canned.	
						Pounds.	Value.	Cases.	Value.
California	222	6	$95,000	$40,000	$135,000	1,071,612	$32,568	15,884	$75,696
Oregon	1,510	22	598,000	835,000	1,433,000	26,432,711	793,238	394,486	2,085,072
Washington	851	13	369,750	520,000	889,750	16,449,570	424,208	238,758	1,163,590
Alaska	1,399	15	493,400	1,067,500	1,560,900	37,534,100	1,126,023	468,970	1,969,674
Total	3,982	56	1,556,150	2,462,500	4,018,650	81,487,993	2,376,037	1,118,098	5,294,032

CALIFORNIA.

GENERAL IMPORTANCE AND EXTENT OF THE INDUSTRY.

The fisheries of California are more important and varied than those of any other west coast State, as determined by the products taken. Considering the entire country, the rank of California as a fishing State is sixth; in the value of its products it is surpassed only by Massachusetts, Maryland, New York, Virginia, and New Jersey. The growth of the industry of late years has been marked, and the near future will doubtless witness an advance in the relative position of California at the expense of several of the east coast States named. The possibilities for the development of the inshore and offshore market fisheries and of other branches are believed to be great.

The special products which give to California the important rank it now occupies are oysters, shrimp, crabs, whales, fur seals, and the general food-fishes of the coast; in the yield of all these it surpasses the other States of this region. The salmon catch, while large as compared with the other products of the State, is insignificant when the remainder of the region is considered. The State owes much of its prominence in this connection to the extensive offshore vessel fisheries carried on for whales, cod, fur seals, etc., a branch of the industry which is of very small extent elsewhere on this coast.

The extent of the fisheries of this State in 1889, 1890, 1891, and 1892 is shown in the following tables, which relate, respectively, to persons employed, capital invested, and products taken:

Persons employed in the fisheries of California.

How engaged.	1889.	1890.	1891.	1892.
Vessel fisheries	1,147	1,412	1,569	1,825
Shore and boat fisheries	2,940	2,922	2,964	2,968
Canning industry and wholesale trade	597	547	576	610
Total	4,684	4,881	5,109	5,403

Vessels, boats, apparatus, shore property, etc., employed in the fisheries of California

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels	53	$628,000	63	$715,300	74	$784,000	84	$890,45
Tonnage	8,608.85	.....	10,261.80	.....	10,582.15	.....	12,436.30	.....
Outfit	.....	271,382	.....	328,907	.....	358,959	.....	394,0
Boats	1,351	179,336	1,364	180,500	1,397	184,123	1,391	183,52
Apparatus:								
Seines	187	21,520	188	21,195	192	21,140	193	20,98
Gill and trammel nets	2,680	117,845	2,675	114,700	2,791	117,427	2,946	120,54
Bag nets and paranzella nets	1,254	38,755	1,251	38,640	1,289	42,395	1,299	43,96
Fyke nets	49	980	49	980	49	980	49	98
Lines	.....	11,936	.....	13,238	.....	14,230	.....	15,95
Pots	183	256	196	273	200	278	203	28
Hoes, rakes, and tongs	.....	681	.....	679	.....	683	.....	68
Other apparatus	.....	6,053	.....	7,716	.....	11,803	.....	13,05
Shore property	.....	459,806	.....	490,027	.....	537,528	.....	596,32
Cash capital	.....	344,500	.....	303,000	.....	248,000	.....	246,00
Total	.....	2,081,950	.....	2,215,155	.....	2,302,446	.....	2,526,74

Products of the fisheries of California.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh	122,510	$2,447	135,000	$2,700	145,000	$2,114	150,175	$1,50
Atka mackerel, salted	.....	.....	.....	.....	64,800	4,860	.....	.....
Barracuda, fresh	383,088	16,381	395,238	16,645	575,751	21,717	217,190	8,69
Barracuda, salted	117,626	4,427	115,840	4,054	119,042	4,249	109,614	3,83
Bonito, fresh	80,619	3,456	93,383	4,237	106,410	4,626	77,110	3,28
Bonito, salted	153,934	5,421	187,417	6,658	174,484	6,179	172,222	6,12
Carp, fresh	51,214	1,734	58,113	1,974	59,618	2,016	65,662	2,19
Cod, salted	1,463,424	36,587	1,782,679	44,567	2,047,911	51,393	2,274,565	56,86
Cultus-cod, fresh	131,044	4,736	167,758	6,283	213,618	7,639	230,670	7,07
Flounders, fresh	3,657,990	87,331	3,531,158	85,237	3,071,989	77,280	4,182,048	92,42
Flounders, salted	67,880	2,715	43,649	1,747	41,071	1,644	43,837	1,75
Herring, fresh	2,572,811	66,101	3,398,824	54,996	3,757,075	48,571	4,486,887	55,79
Kingfish, fresh	8,460	254	10,208	306	24,080	963	40,000	1,20
Mackerel, fresh	315,253	13,249	311,564	12,698	518,883	20,863	350,399	14,15
Perch, fresh	353,849	15,908	400,429	18,273	325,455	10,906	335,117	10,92
Rockfish, fresh	2,065,678	63,119	2,253,308	67,822	1,893,072	59,325	1,819,987	51,28
Rockfish, salted	42,553	1,866	30,716	1,354	29,219	1,258	9,670	48
Salmon, chinook, fresh	6,765,430	271,092	3,380,116	134,492	2,341,045	91,639	3,541,204	141,15
Salmon, chinook, salted	.....	.....	.....	.....	.....	.....	90,000	3,60
Salmon, silver, fresh	1,365,720	40,826	1,184,952	35,381	1,073,446	34,516	881,762	27,63
Salmon, silver, salted	435,000	17,324	167,000	6,680	116,200	4,448	39,000	1,50
Salmon, steelhead, fresh	440,921	10,506	363,399	7,007	315,731	6,220	310,442	6,08
Sardines, fresh	1,097,397	22,429	1,314,800	20,591	937,568	18,988	752,994	15,23
Sea bass, fresh	452,847	17,957	319,081	12,560	372,258	12,414	253,212	9,61
Sea bass, salted	2,500	125	6,581	291	21,301	1,022	4,500	18
Shad, fresh	263,788	10,833	318,140	11,891	445,006	15,856	526,494	14,37
Smelt, fresh	1,915,478	57,492	2,073,599	61,306	2,126,084	64,623	1,919,894	53,46
Striped bass, fresh	16,296	4,073	20,119	4,021	30,674	4,602	56,209	6,48
Sturgeon, fresh	693,650	21,250	612,585	18,869	727,551	22,213	718,017	21,85
Yellow-tail, fresh	188,272	7,336	112,583	4,817	160,981	6,591	163,027	6,87
Yellow-tail, salted	58,243	2,116	172,268	6,109	178,751	6,334	191,407	6,81
Other fish	1,717,851	33,277	1,895,101	36,022	1,902,992	37,971	2,217,410	46,15
Abalone meats and shells	310,079	8,089	203,783	5,553	302,781	7,572	404,547	9,35
Octopus and squid	484,100	38,212	267,809	20,816	314,910	24,323	374,622	29,03
Clams, hard	570,710	6,232	511,980	5,975	450,800	5,660	479,500	6,44
Clams, soft	1,118,700	11,897	1,261,980	13,421	1,515,360	15,877	2,017,200	20,43
Oysters	12,369,000	571,525	12,829,500	592,137	13,387,800	618,455	15,098,700	698,25
Mussels	2,100,000	8,750	2,700,000	11,250	2,998,080	12,500	2,880,000	12,00
Crabs	2,030,400	79,045	2,090,000	83,125	2,348,100	93,406	2,862,320	102,90
Shrimp and prawn	5,535,322	253,617	5,822,693	266,593	6,892,940	223,601	5,313,344	241,81
Spiny lobster	266,458	7,327	278,310	7,747	272,245	7,668	303,275	8,48
Terrapin and frogs	41,250	5,400	47,563	7,550	49,762	7,770	45,625	8,05
Hair-seal and sea-lion pelts	.....	2,198	.....	1,770	.....	3,206	.....	2,26
Fur-seal pelts	.....	15,219	.....	69,816	.....	134,220	.....	167,52
Sea-otter pelts	.....	30,700	.....	29,300	.....	31,700	.....	36,15
Whale oil	1,510,080	61,952	2,235,915	105,052	1,763,985	71,190	1,574,843	62,12
Whalebone	419,650	520,478	170,118	680,472	223,771	1,118,855	197,339	937,37
Seal oil	14,610	619	11,790	521	9,990	423	.....	.....
Cod sounds	.....	.....	.....	.....	.....	.....	600	42
Cod oil	.....	.....	.....	.....	975	65	.....	.....
Cod tongues	12,600	882	13,800	966	16,200	1,134	27,500	1,92
Algæ	20,170	807	29,345	1,174	19,141	765	28,325	1,13
Total	53,305,055	2,465,317	53,330,194	2,592,826	52,483,906	3,031,430	57,838,466	3,022,99

In the foregoing figures, the products have, wherever practicable, been reduced to the common unit of a pound. In the following table such products as crabs, clams, oysters, etc., that are commonly sold on a different basis, and the pelts of marine mammals of which only the value is given in the above table, are shown by number, bushels, etc., as the case may be.

Species.	1889.	1890.	1891.	1892.
Crabs.....number..	676,800	696,667	782,700	954,107
Clams, hard.....bushels..	8,153	7,314	6,440	6,850
Clams, soft.....do....	18,645	21,033	25,256	33,620
Mussels.....do....	35,000	45,000	49,968	48,000
Oysters.....do....	146,150	151,325	158,130	178,645
Hair-seal and sea-lion pelts.....number..	814	639	573	535
Fur-seal pelts.....do....	1,691	5,818	8,948	14,710
Sea-otter pelts.....do....	307	293	163	235
Whale oil.....gallons..	201,344	298,122	235,198	209,979

SHAD AND STRIPED BASS.

Among the most interesting and important information that may be presented regarding the fisheries of California is that concerning the remarkable success attending the introduction of shad and striped bass in the waters of the State. While much has already been said and written on this subject, the following data, representing the personal inquiries of the writer, are thought to contain some points of interest not before generally known.

Soon after the shad first began to be caught in the gill nets of the salmon fishermen of San Francisco Bay and Sacramento River, the fish were protected by State law, and the few examples occasionally smuggled into the San Francisco market sometimes brought the fishermen $5 apiece. The rapid increase of the fish, however, soon made it apparent that further protection was unnecessary, and, accordingly, in 1889 the restrictions on capture were removed. In the year named the fish were so abundant that at times they sold for 10 cents per pound. In 1892 the catch had become so large that the price at which the fish were retailed in San Francisco was only 2 or 3 cents per pound, two fish often being sold for 25 cents. At times the San Francisco Bay fishermen were able to sell their catch at only 1 cent a pound. In other parts of the State, where only a small number of shad are taken incidentally during the salmon fishery, much higher prices are received in the local market.

The catch of shad in California waters is made chiefly in San Francisco Bay and Sacramento River. Monterey Bay continues to be the southern limit on the coast at which shad are found. More fish are taken on the north side of the bay by the Santa Cruz fishermen than elsewhere in that region. The mountain streams which enter the bay at Santa Cruz may be responsible for the presence of the shad only on that side of the bay. The fish is also taken in small numbers in all the

coast rivers north of San Francisco. In the vicinity of San Francisco the principal part of the shad yield is obtained between February and May, but the market fishermen of San Francisco take larger or smaller quantities during every month. San Francisco is the only city in the United States in the markets of which fresh shad just from the water may be found at any time in the year.

All of the shad taken in California are obtained with gill nets and haul seines used in other branches of the fisheries, no special apparatus being used and no special attention being given to their capture.

The following table is of interest as showing the rapid increase of shad during the comparatively few years which have elapsed since its introduction on the Pacific Coast. The fish have not only increased in numbers, but also show a gain in average weight and size which has been quite marked. While a few years ago the average weight was only 2½ or 3 pounds, it is now somewhat over 4 pounds, and large numbers of specimens weighing 8 pounds or more are taken.

Counties.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Contra Costa	96,722	$3,869	102,216	$4,089	108,111	$4,320	139,364	$4,181
Humboldt	300	30	250	25	160	16	100	10
Sacramento	13,224	793	15,960	958	17,516	1,051	21,579	1,295
San Francisco	61,072	2,443	116,942	3,508	230,460	6,914	242,749	4,855
Santa Cruz	20,264	810	24,880	995	30,120	1,205	35,000	1,400
Solano	72,206	2,888	57,892	2,316	58,739	2,350	87,702	2,631
Total	263,788	10,833	318,140	11,891	445,006	15,856	526,494	14,372

The striped bass of the Atlantic is justly classed as one of the best of the food-fishes of that coast. This fish was unknown on the Pacific up to its introduction a few years since through the agency of the United States Fish Commission. During the past four years it has steadily and largely increased in abundance and size, apparently thriving as well in its new home on the Pacific Coast as on the Atlantic seaboard. The principal catch is from about the first of October up to the middle of February, but a few are taken in all of the other months. Most of the fish are obtained from the salmon gill nets fished in San Francisco Bay and its several arms, and near the mouth of the Sacramento River.

The only apparatus used exclusively for striped bass are a few small purse seines. The seines are from 40 to 50 fathoms long, 3 fathoms deep, and cost $125 each. Each seine is operated by four fishermen and two boats. The salmon gill nets, in which many bass are found, are 200 to 250 fathoms long, 4½ fathoms deep, with a 6 to 6½ inch mesh, and a value of $150 to $225 each. Most of the bass are taken in and near the mouth of the San Joaquin River.

The spawning-grounds of the fish are located in Middle River and Old River, both arms of the San Joaquin, and only a few miles above its mouth. These rivers have sandy and gravelly beds that are favorite

grounds for the striped bass during the spawning season. Many fish are taken from this section, but few, if any, are found further up the San Joaquin River.

The striped bass seems to make its home between the entrance to the Golden Gate and the short distance mentioned up the San Joaquin, a distance of some 100 to 125 miles. It does not go up the Sacramento River much, if any, above its mouth, none being caught by Sacramento fishermen near that city.

The striped bass vary in weight from 3 to 25 pounds, in some cases reaching 35 to 40 pounds; the average is 8 to 12 pounds. With the increase of the abundance of the fish and the augmented catch, both the consumer and the fisherman have reaped benefits; the marked decrease in price that favored the one was more than made up to the fisherman in his larger sales. The average price received by the fishermen was 40 cents a pound in 1889, 25 cents in 1890, 20 cents in 1891, and 12½ cents in 1892.

During the season of 1892, when fish were most abundant, the fishermen received only 8 cents a pound, and again, in times of scarcity, as high as 20 cents a pound. During 1888 the few bass caught brought a dollar a pound in city markets; in 1892 the retail price was 20 to 30 cents a pound. The yearly catch has been as follows:

Years.	Pounds.	Value.
1889	2,440	$976
1890	9,760	2,440
1891	21,350	4,270
1892	42,700	5,337

DETAILED STATISTICAL DATA.

In the following tables detailed statistics of the fisheries of California are given for the years 1889 to 1892 inclusive. The fishery interests of each county are separately indicated. The tables presented are: (1) The number of persons engaged in different capacities in the fishing industry; (2) the same designated by nativity and nationality; (3) the vessels, boats, apparatus, shore property, and cash capital devoted to the fisheries; (4) the quantity and value of products taken; (5) the same specified by the apparatus with which obtained. The statistical information is thus more complete than any heretofore offered for this State.

Table showing by counties the number of persons employed in the fisheries of California in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Contra Costa	.....	.....	337	62	399	.....	.....	333	62	395
Del Norte	.....	.....	45	67	112	.....	.....	46	72	118
Humboldt	.....	.....	352	31	383	.....	.....	316	6	322
Los Angeles	.....	.....	165	.....	165	.....	.....	175	.....	175
Marin	.....	.....	236	89	325	.....	.....	233	87	320
Monterey	.....	.....	122	.....	122	.....	.....	123	.....	123
Orange	.....	.....	8	.....	8	.....	.....	10	.....	10
Sacramento	.....	.....	46	11	57	.....	.....	46	11	57
San Diego	33	.....	72	.....	105	30	.....	72	.....	102
San Francisco	1,090	24	797	263	2,174	1,355	24	709	270	2,448
San Luis Obispo	.....	.....	35	.....	35	.....	.....	38	.....	38
San Mateo	.....	.....	195	.....	195	.....	.....	197	.....	197
Santa Barbara	.....	.....	35	.....	35	.....	3	36	.....	39
Santa Cruz	.....	.....	60	.....	60	.....	.....	63	.....	63
Shasta	.....	.....	9	.....	9	.....	.....	9	.....	9
Solano	.....	.....	380	74	454	.....	.....	378	39	417
Sonoma	.....	.....	18	.....	18	.....	.....	19	.....	19
Tehama	.....	.....	24	.....	24	.....	.....	25	.....	25
Ventura	.....	.....	4	.....	4	.....	.....	4	.....	4
Total	1,123	24	2,940	597	4,684	1,385	27	2,922	547	4,881

Counties.	1891.					1892.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Contra Costa	.....	.....	320	62	382	.....	.....	320	62	382
Del Norte	.....	.....	47	45	92	.....	.....	48	70	118
Humboldt	.....	.....	314	6	320	.....	.....	320	6	326
Los Angeles	3	.....	191	25	219	.....	.....	199	25	234
Marin	.....	.....	238	88	326	.....	.....	239	90	329
Monterey	.....	.....	121	.....	121	.....	.....	121	.....	121
Orange	.....	.....	12	.....	12	.....	.....	12	.....	12
Sacramento	.....	.....	45	11	56	.....	.....	44	11	55
San Diego	27	.....	82	.....	109	30	.....	62	.....	92
San Francisco	1,502	34	812	281	2,629	1,758	24	824	286	2,892
San Luis Obispo	.....	.....	38	.....	38	.....	.....	38	.....	38
San Mateo	.....	.....	204	.....	204	.....	.....	200	.....	200
Santa Barbara	.....	3	37	.....	40	.....	3	37	.....	40
Santa Cruz	.....	.....	62	.....	62	.....	.....	60	.....	60
Shasta	.....	.....	11	.....	11	.....	.....	11	.....	11
Solano	.....	.....	381	58	439	.....	.....	384	60	444
Sonoma	.....	.....	19	.....	19	.....	.....	19	.....	19
Tehama	.....	.....	26	.....	26	.....	.....	26	.....	26
Ventura	.....	.....	4	.....	4	.....	.....	4	.....	4
Total	1,532	37	2,964	576	5,109	1,798	27	2,968	610	5,403

Table showing by counties the nativity and nationality of the vessel fishermen of California in 1892.

Countries.	Los Angeles.		San Diego.		San Francisco.		Santa Barbara.	
	Nativity.	Nationality.	Nativity.	Nationality.	Nativity.	Nationality.	Nativity.	Nationality.
Africa					1			
Australia					16			
Austria					6	1		
Belgium					7	5		
Canada					28			
China			6	6	3	3		
Denmark					44	29		
East Indies					2			
England					132	212		
France					24	19		
Germany					131	86		
Greece					4			
Holland					12	5		
Ireland					37			
Italy					11			
Japan					45	45		
Mexico					4	4		
New Brunswick					7			
Newfoundland					1			
New Zealand					3			
Norway					125	72		
Nova Scotia					20			
Portugal	3	2	18	12	120	88		
Russia					34	22		
St. Helena					6			
Sandwich Islands					31	28		
Scotland					43			
South America					14	8		
Spain					65	55		
Sweden					129	71		
Switzerland					6	4		
United States	7	8	6	12	642	1,014	3	3
United States Indians					9	9		
United States of Colombia					2	2		
West Indies					18			
Total	10	10	30	30	1,782	1,782	3	3

NOTE.—In this table the various provinces of the British Empire are shown separately as regards the nativity of the fishermen, but in the matter of nationality all are given under the general head of England.

Table showing the nativity of the shore or boat fishermen of California in 1892.

Counties.	Countries.															
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	Sandwich Islands.	Mexico.	Great Britain.	France.	Total.
Contra Costa	1	150	2	6	6	2	16	137									320
Del Norte	18								30								48
Humboldt	140		22					69	26	23	30	35					320
Los Angeles	53		3		1		16	54		2	28	42					199
Marin	9	*200		13				15	2								239
Monterey		80	3			1		7				30					121
Orange	6							6									12
Sacramento		20			4			2					18				44
San Diego	50											12					62
San Francisco	6	300		111		61	72	218				56					824
San Luis Obispo	5		2									30		1			38
San Mateo		200															200
Santa Barbara	12	18		5				2									37
Santa Cruz	18	7	2		4			28			1						60
Shasta	11																11
Solano	11		14		20		101	170		4	14	28			12	10	384
Sonoma	10							1	8								19
Tehama	26																26
Ventura								4									4
Total	346	975	48	135	35	64	205	713	66	34	73	233	18	1	12	10	2,968

Table showing the nationality of the shore or boat fishermen of California in 1892.

Counties.	Countries.															
	United States.	China.	Norway.	Austria.	Germany.	Spain.	Greece.	Italy.	American Indian.	Russia.	Sweden.	Portugal.	Sandwich Islands.	Mexico.	Great Britain.	France.	Total.
Contra Costa	67	150	....	2	....	2	1	98	....	....	....	....	....	....	....	....	320
Del Norte	18	....	....	....	....	....	....	....	30	....	....	....	....	....	....	....	48
Humboldt	232	....	5	....	....	....	....	35	26	9	6	7	....	....	....	....	320
Los Angeles	100	....	2	....	....	....	12	42	....	2	11	30	....	....	....	....	199
Marin	11	200	....	11	....	....	....	15	2	....	....	....	....	....	....	....	239
Monterey	37	80	2	....	....	....	....	2	....	....	....	....	....	....	....	....	121
Orange	8	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	12
Sacramento	4	20	....	....	....	....	....	2	....	....	....	....	18	....	....	....	44
San Diego	54	....	....	....	....	....	....	....	....	....	....	8	....	....	....	....	62
San Francisco	220	300	....	82	....	30	41	113	....	....	....	38	....	....	....	....	824
San Luis Obispo	25	....	1	....	....	....	....	....	....	....	....	11	....	1	....	....	38
San Mateo	....	200	....	....	....	....	....	....	....	....	....	....	....	....	....	....	200
Santa Barbara	14	18	....	5	....	....	....	....	....	....	....	....	....	....	....	....	37
Santa Cruz	33	7	....	....	....	....	....	20	....	....	....	....	....	....	....	....	60
Shasta	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11
Solano	138	....	....	....	....	....	71	145	....	....	....	12	....	....	12	6	384
Sonoma	10	....	....	....	....	....	....	1	8	....	....	....	....	....	....	....	19
Tehama	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26
Ventura	2	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	4
Total	1,010	975	10	100	....	32	125	479	66	11	17	106	18	1	12	6	2,968

Table showing the nativity and nationality of shoresmen and factory hands employed in the fishing industry of California in 1892.

Counties.	Nativity.							Nationality.						
	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.	Total.	United States.	United States Indians.	China.	Sweden.	Norway.	Great Britain.	Total.
Contra Costa	12	....	50	....	....	....	62	12	....	50	....	....	....	62
Del Norte	15	55	....	....	....	....	70	15	55	....	....	....	....	70
Humboldt	6	....	....	....	....	....	6	6	....	....	....	....	....	6
Los Angeles	25	....	....	....	....	....	25	25	....	....	....	....	....	25
Marin	10	....	....	35	26	13	90	38	....	....	15	13	6	90
Sacramento	6	....	5	....	....	....	11	....	....	5	....	....	....	11
San Francisco	286	....	....	....	....	....	286	286	....	....	....	....	....	286
Solano	13	....	47	....	....	....	60	13	....	47	....	....	....	60
Total	379	55	102	35	26	13	610	419	55	102	15	13	6	610

Table showing by counties the apparatus and capital employed in the fisheries of California in 1889, 1890, 1891, and 1892.

Items.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.		Marin.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Boats	166	$23,110	31	$910	146	$3,020	99	$17,925	38	$4,040
Apparatus—shore fisheries:										
Seines	.....	.....	3	800	17	5,100	4	400	7	550
Gill nets	75	16,500	31	950	120	6,600	108	4,770	128	2,280
Bag nets	193	4,875	.....	.....	.....	.....	23	2,250	250	6,280
Fyke nets	24	480	.....	.....	.....	.....	.....	.....	.....	.....
Trammel nets	.....	.....	.....	.....	.....	.....	.....	.....	12	180
Hoop nets	.....	.....	.....	.....	18	45	.....	.....	.....	.....
Lines	.....	480	.....	.....	.....	50	.....	730	.....	.....
Pots	.....	.....	.....	.....	.....	.....	98	128	.....	.....
Hoes and rakes	.....	.....	.....	.....	.....	12	.....	.....	.....	24
Minor apparatus	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Shore property	.....	24,365	.....	22,000	.....	20,000	.....	405	.....	66,100
Cash capital	.....	60,000	.....	12,500	.....	30,000	.....	.....	.....	25,000
Total	.....	129,810	.....	37,160	.....	64,827	.....	26,608	.....	104,457
1890.										
Boats	164	22,970	30	887	142	2,940	105	18,573	58	4,025
Apparatus—shore fisheries:										
Seines	.....	.....	3	800	15	4,500	4	400	7	550
Gill nets	72	15,960	30	918	115	6,325	113	5,020	126	2,245
Bag nets	190	4,800	.....	.....	.....	.....	23	2,250	245	6,125
Fyke nets	24	480	.....	.....	.....	.....	.....	.....	.....	.....
Trammel nets	.....	.....	.....	.....	.....	.....	.....	.....	12	180
Hoop nets	.....	.....	.....	.....	18	45	.....	.....	.....	.....
Lines	.....	498	.....	.....	.....	50	.....	745	.....	.....
Pots	.....	.....	.....	.....	.....	.....	105	135	.....	.....
Hoes and rakes	.....	.....	.....	.....	.....	12	.....	.....	.....	22
Minor apparatus	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Shore property	.....	24,365	.....	22,000	.....	5,000	.....	415	.....	66,000
Cash capital	.....	60,000	.....	17,000	.....	5,000	.....	.....	.....	25,000
Total	.....	129,073	.....	41,605	.....	23,872	.....	27,538	.....	104,150
1891.										
Vessels fishing	.....	.....	.....	.....	.....	.....	1	500	.....	.....
Tonnage	.....	.....	.....	.....	.....	.....	14.41	.....	.....	.....
Outfit	.....	.....	.....	.....	.....	.....	.....	400	.....	.....
Boats	160	22,943	30	885	141	2,920	115	19,360	58	4,010
Apparatus—vessel fisheries:										
Lines	.....	.....	.....	.....	.....	.....	.....	50	.....	.....
Apparatus—shore fisheries:										
Seines	.....	.....	3	825	15	4,500	4	400	7	550
Gill nets	70	15,715	30	900	112	6,160	130	5,450	126	2,245
Bag nets	188	4,760	.....	.....	.....	.....	29	2,700	252	6,300
Fyke nets	24	480	.....	.....	.....	.....	.....	.....	.....	.....
Trammel nets	.....	.....	.....	.....	.....	.....	.....	.....	12	180
Hoop nets	.....	.....	.....	.....	18	45	.....	.....	.....	.....
Lines	.....	525	.....	.....	.....	60	.....	910	.....	.....
Pots	.....	.....	.....	.....	.....	.....	105	135	.....	.....
Hoes and rakes	.....	.....	.....	.....	.....	14	.....	.....	.....	22
Minor apparatus	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Shore property	.....	24,330	.....	14,000	.....	5,000	.....	5,675	.....	66,075
Cash capital	.....	10,000	.....	12,000	.....	5,000	.....	10,000	.....	25,000
Total	.....	78,753	.....	28,610	.....	23,699	.....	45,580	.....	104,385
1892.										
Vessels fishing	.....	.....	.....	.....	.....	.....	3	7,000	.....	.....
Tonnage	.....	.....	.....	.....	.....	.....	64.21	.....	.....	.....
Outfit	.....	.....	.....	.....	.....	.....	.....	1,000	.....	.....
Boats	164	22,910	30	885	144	3,520	121	20,341	58	4,080
Apparatus—vessel fisheries:										
Lines	.....	.....	.....	.....	.....	.....	.....	150	.....	.....
Apparatus—shore fisheries:										
Seines	.....	.....	3	850	14	4,200	4	400	7	550
Gill nets	70	15,625	30	900	119	6,545	140	5,950	125	2,226
Bag nets	188	4,760	.....	.....	.....	.....	28	2,625	250	6,250
Fyke nets	24	480	.....	.....	.....	.....	.....	.....	.....	.....
Trammel nets	.....	.....	.....	.....	.....	.....	.....	.....	12	180
Hoop nets	.....	.....	.....	.....	18	45	.....	.....	.....	.....
Lines	.....	570	.....	.....	.....	80	.....	960	.....	.....
Pots	.....	.....	.....	.....	.....	.....	105	135	.....	.....
Hoes and rakes	.....	.....	.....	.....	.....	17	.....	.....	.....	25
Minor apparatus	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Shore property	.....	24,330	.....	22,000	.....	5,000	.....	5,690	.....	66,000
Cash capital	.....	20,000	.....	8,000	.....	5,000	.....	5,000	.....	25,000
Total	.....	88,675	.....	32,635	.....	24,407	.....	49,251	.....	104,314

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	Monterey.		Orange.		Sacramento.		San Diego.		San Luis Obispo.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Vessels fishing							11	$5,900		
Tonnage							127.81			
Outfit								4,425		
Boats	86	$5,940	4	$90	23	$375	88	15,916	14	$1,925
Apparatus—vessel fisheries:										
Lines								510		
Apparatus—shore fisheries:										
Seines	25	2,500	1	150	8	410	10	2,000		
Gill nets	354	8,090			13	975	12	1,200	40	2,000
Bag nets	5	200	1	75			2	1,000	2	300
Fyke nets					25	500				
Hoop nets					18	55				
Lines		1,245		40				467		100
Pots							25	38		
Hoes and rakes								20		
Minor apparatus								45		645
Shore property		2,165				1,565		5,700		370
Cash capital						6,000				
Total		20,140		355		9,880		37,221		5,340
1890.										
Vessels fishing							10	5,000		
Tonnage							105.22			
Outfit								3,825		
Boats	87	5,995	5	120	22	355	90	16,275	16	1,975
Apparatus—vessel fisheries:										
Lines								480		
Apparatus—shore fisheries:										
Seines	25	2,500	1	150	8	410	10	2,000		
Gill nets	357	8,227			12	900	12	1,200	28	1,910
Bag nets	5	200	1	75			2	1,000	2	300
Fyke nets					25	500				
Hoop nets					17	53				
Lines		1,287		65				490		110
Pots							25	38		
Hoes and rakes								20		
Minor apparatus								45		400
Shore property		2,230				1,578		5,700		500
Cash capital						6,000				
Total		20,439		410		9,796		36,073		5,195
1891.										
Vessels fishing							9	4,600		
Tonnage							89.10			
Outfit								3,500		
Boats	86	5,932	6	150	21	340	100	17,988	16	1,975
Apparatus—vessel fisheries:										
Lines								430		
Apparatus—shore fisheries:										
Seines	25	2,500	2	300	8	400	6	1,200		
Gill nets	353	8,075			10	750	10	1,000	38	1,910
Bag nets	5	200	2	150			3	1,500	2	300
Fyke nets					25	500				
Hoop nets					19	58				
Lines		1,360		75				536		126
Pots							25	38		
Hoes and rakes								22		
Minor apparatus								60		400
Shore property		2,450				1,550		5,700		700
Cash capital						6,000				
Total		20,517		675		9,598		36,574		5,411
1892.										
Vessels fishing							10	5,150		
Tonnage							95.91			
Outfit								3,900		
Boats	84	5,800	6	150	21	340	77	13,844	16	1,975
Apparatus—vessel fisheries:										
Lines								480		
Apparatus—shore fisheries:										
Seines	25	2,500	2	300	8	400	3	600		
Gill nets	350	8,000			10	750	6	600	40	2,000
Bag nets	5	200	2	150			4	2,000	2	300
Fyke nets					25	500				
Hoop nets					20	60				
Lines		1,395		75				580		140
Pots							25	38		
Hoes and rakes								22		
Minor apparatus								75		400
Shore property		2,500				1,550		5,700		800
Cash capital						6,000				
Total		20,395		675		9,600		32,989		5,615

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Mateo.		Santa Barbara.		Santa Cruz.		Shasta.		Solano.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.										
Boats	48	$2,415	22	$2,775	43	$5,040	3	$60	259	$33,765
Apparatus—shore fisheries:										
Seines			3	600	1	75	3	300		
Gill nets			17	1,690	113	2,120			186	36,090
Bag nets	328	8,200			8	1,100				
Trammel nets					80	1,625				
Lines				70		190				2,016
Pots			60	90						
Minor apparatus				300						
Shore property		7,800		410		826		50		20,000
Cash capital										43,000
Total		18,415		5,935		10,976		410		134,871
1890.										
Vessels transporting			1	5,000						
Tonnage			14.80							
Outfit				300						
Boats	47	2,400	23	2,880	48	4,900	3	60	259	33,765
Apparatus—shore fisheries:										
Seines			3	600	1	75	3	300		
Gill nets			19	1,900	90	1,945			186	36,090
Bag nets	325	8,140			8	1,025				
Trammel nets					74	1,410				
Lines				70		190				2,140
Pots			66	100						
Minor apparatus				300						
Shore property		7,900		465		774		50		20,000
Cash capital										15,000
Total		18,440		11,615		10,319		410		106,995
1891.										
Vessels transporting			1	4,300						
Tonnage			11.92							
Outfit				440						
Boats	48	2,440	25	3,150	54	4,590	4	75	262	34,250
Apparatus—shore fisheries:										
Seines			3	600	1	75	4	400		
Gill nets			20	1,000	104	1,920			192	37,050
Bag nets	330	8,260			9	1,325				
Trammel nets					75	1,425				
Lines				68		207				2,200
Pots			70	105						
Minor apparatus				300						
Shore property		7,900		480		868		50		50,000
Cash capital										8,000
Total		18,600		10,443		10,410		525		131,500
1892.										
Vessels transporting			1	4,300						
Tonnage			11.92							
Outfit				300						
Boats	50	2,500	25	3,150	53	4,465	4	70	263	34,425
Apparatus—shore fisheries:										
Seines			3	600	1	75	4	400		
Gill nets			20	1,000	100	1,805			192	37,050
Bag nets	335	8,375			9	1,300				
Trammel nets					71	1,356				
Lines				75		220				2,376
Pots			73	110						
Minor apparatus				300						
Shore property		8,000		500		950		50		50,000
Cash capital										8,000
Total		18,875		10,335		10,171		520		131,851

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value
1889.										
Vessels fishing	36	$598,000							47	$603,900
Tonnage	8,270.55								8,398.36	
Outfit		295,357								269,782
Vessels transporting	6	25,000							6	25,000
Tonnage	338.49								338.49	
Outfit		1,800								1,800
Boats	239	60,650	8	$500	10	$180	4	$700	1,351	179,336
Apparatus—vessel fisheries:										
Paranzella nets	5	950							5	950
Lines		288								798
Other apparatus		3,250								3,250
Apparatus—shore fisheries:										
Seines	90	7,200	2	150	13	1,285			187	21,520
Gill nets	1,170	27,000	6	600					2,273	110,865
Bag nets	435	13,375					2	150	1,249	37,805
Fyke nets									49	980
Trammel nets	315	5,175							407	6,980
Hoop nets									36	100
Lines		5,700		40				10		11,138
Pots									183	258
Tongs	50	500							50	500
Hoes and rakes		125								181
Minor apparatus		1,710								2,703
Shore property		287,800				250				459,806
Cash capital		168,000								344,500
Total		1,471,680		1,290		1,715		860		2,081,950
1890.										
Vessels fishing	46	680,300							56	685,300
Tonnage	9,803.35								9,908.57	
Outfit		322,482								326,307
Vessels transporting	6	25,000							7	30,000
Tonnage	338.43								353.23	
Outfit		2,300								2,600
Boats	243	60,960	8	540	10	180	4	700	1,364	180,500
Apparatus—vessel fisheries:										
Paranzella nets	5	950							5	950
Lines		382								862
Other apparatus		5,250								5,250
Apparatus—shore fisheries:										
Seines	92	7,360	2	150	14	1,400			188	21,195
Gill nets	1,123	24,920	6	600					2,289	108,160
Bag nets	443	13,625					2	150	1,246	37,690
Fyke nets									49	980
Trammel nets	300	4,950							386	6,540
Hoop nets									35	98
Lines		6,679		42				10		12,376
Pots									196	273
Tongs	50	500							50	500
Hoes and rakes		125								179
Minor apparatus		1,620								2,368
Shore property		332,800				250				490,027
Cash capital		175,000								303,000
Total		1,665,203		1,332		1,830		860		2,215,155

Apparatus and capital employed in the fisheries of California, etc.—Continued.

Items.	San Francisco.		Sonoma.		Tehama.		Ventura.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
1891.										
Vessels fishing	55	$739,500	.....	.....	.....	.....	.....	.....	65	$744,600
Tonnage	9,942.46	.....	.....	.....	.....	.....	.....	.....	10,045.97	.....
Outfit	.....	331,519	.....	.....	.....	.....	.....	.....	.....	335,419
Vessels transporting	8	36,000	.....	.....	.....	.....	.....	.....	9	40,300
Tonnage	524.26	.....	.....	.....	.....	.....	.....	.....	536.18	.....
Outfit	.....	3,100	.....	.....	.....	.....	.....	.....	.....	3,540
Boats	248	61,650	8	$550	11	$195	4	$720	1,397	184,123
Apparatus—vessel fisheries:										
Paranzella nets	15	2,850	.....	.....	.....	.....	.....	.....	15	2,850
Lines	.....	419	.....	.....	.....	.....	.....	.....	.....	899
Other apparatus	.....	9,250	.....	.....	.....	.....	.....	.....	.....	9,250
Apparatus—shore fisheries:										
Seines	98	7,840	2	150	14	1,400	.....	.....	192	21,140
Gill nets	1,185	27,800	6	600	.....	.....	.....	.....	2,386	110,575
Bag nets	452	13,900	.....	.....	.....	.....	2	150	1,274	39,545
Fyke nets	.....	.....	.....	.....	.....	.....	.....	.....	49	980
Trammel nets	318	5,247	.....	.....	.....	.....	.....	.....	405	6,852
Hoop nets	.....	.....	.....	.....	.....	.....	.....	.....	37	103
Lines	.....	7,202	.....	50	.....	.....	.....	12	.....	13,331
Pots	.....	.....	.....	.....	.....	.....	.....	.....	200	278
Tongs	50	500	.....	.....	.....	.....	.....	.....	50	500
Hoes and rakes	.....	125	.....	.....	.....	.....	.....	.....	.....	183
Minor apparatus	.....	1,687	.....	.....	.....	.....	.....	.....	.....	2,450
Shore property	.....	352,500	.....	.....	.....	250	.....	.....	.....	537,528
Cash capital	.....	172,000	.....	.....	.....	.....	.....	.....	.....	248,000
Total	.....	1,773,089	.....	1,350	.....	1,845	.....	882	.....	2,302,446
1892.										
Vessels fishing	63	834,500	.....	.....	.....	.....	.....	.....	76	846,650
Tonnage	11,792.65	.....	.....	.....	.....	.....	.....	.....	11,952.77	.....
Outfit	.....	386,600	.....	.....	.....	.....	.....	.....	.....	391,500
Vessels transporting	6	39,500	.....	.....	.....	.....	.....	.....	7	43,800
Tonnage	471.61	.....	.....	.....	.....	.....	.....	.....	483.53	.....
Outfit	.....	2,200	.....	.....	.....	.....	.....	.....	.....	2,500
Boats	252	63,600	8	550	11	195	4	720	1,391	183,520
Apparatus—vessel fisheries:										
Paranzella nets	20	3,800	.....	.....	.....	.....	.....	.....	20	3,800
Seines	1	400	.....	.....	.....	.....	.....	.....	1	400
Lines	.....	494	.....	.....	.....	.....	.....	.....	.....	1,124
Other apparatus	.....	10,450	.....	.....	.....	.....	.....	.....	.....	10,450
Apparatus—shore fisheries:										
Seines	102	8,160	2	150	14	1,400	.....	.....	192	20,585
Gill nets	1,298	30,070	6	600	.....	.....	.....	.....	2,506	113,121
Bag nets	454	14,050	.....	.....	.....	.....	2	150	1,279	40,160
Fyke nets	.....	.....	.....	.....	.....	.....	.....	.....	49	980
Trammel nets	357	5,890	.....	.....	.....	.....	.....	.....	440	7,426
Hoop nets	.....	.....	.....	.....	.....	.....	.....	.....	38	105
Lines	.....	8,294	.....	50	.....	.....	.....	15	.....	14,830
Pots	.....	.....	.....	.....	.....	.....	.....	.....	203	283
Tongs	50	500	.....	.....	.....	.....	.....	.....	50	500
Hoes and rakes	.....	125	.....	.....	.....	.....	.....	.....	.....	189
Minor apparatus	.....	1,725	.....	.....	.....	.....	.....	.....	.....	2,503
Shore property	.....	403,000	.....	.....	.....	250	.....	.....	.....	596,320
Cash capital	.....	169,000	.....	.....	.....	.....	.....	.....	.....	246,000
Total	.....	1,982,358	.....	1,350	.....	1,845	.....	885	.....	2,526,746

Table showing by counties and species the yield of the fisheries of California in 1889.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh							88,891	$3,454
Carp, fresh	11,914	$357						
Cultus-cod, fresh					21,040	$735		
Flounders, fresh	256,602	3,850			132,440	3,139	177,822	7,112
Herring fresh	192,519	2,888			10,000	200	61,000	2,440
Mackerel, fresh							117,423	4,697
Perch, fresh					20,150	504	17,200	688
Rockfish, fresh					26,115	755	45,954	1,838
Salmon, chinook, fresh	3,195,747	127,830	218,875	$6,078				
Salmon, silver, fresh			189,205	3,543	1,176,515	37,283		
Salmon, silver, salted					435,600	17,324		
Salmon, steelhead, fresh			48,750	728	392,171	9,778		
Sardines, fresh							18,397	669
Sea bass, fresh							11,109	444
Shad, fresh	96,722	3,869			300	30		
Smelt, fresh	130,012	2,070			29,500	738	145,301	5,812
Striped bass, fresh	13,776	3,443						
Sturgeon, fresh	350,410	10,513						
Yellow-tail, fresh							30,650	1,226
Other fish, fresh and salted	206,264	3,221					61,774	2,470
Abalone meats and shells							19,810	452
Clams, hard					43,750	937		
Clams, soft					10,800	270		
Crabs					86,400	3,000		
Shrimp and prawn	919,221	41,769						
Spiny lobster							108,600	2,815
Hair-seal and sea-lion pelts								580
Seal oil							7,200	288
Total	5,373,277	199,810	456,830	10,349	2,384,781	74,693	910,531	34,985

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh			28,056	$1,680	2,000	$80		
Carp, fresh							39,300	$1,377
Flounders, fresh	407,053	$7,840	278,490	5,565	5,481	195		
Flounders, salted			67,880	2,715				
Herring, fresh	337,442	7,080			4,645	170		
Mackerel, fresh			75,040	3,753	3,000	120		
Perch, fresh	89,997	3,600			2,320	92	4,282	255
Rockfish, fresh			1,112,753	22,267	6,000	240		
Rockfish, salted			30,750	1,230				
Salmon, chinook, fresh	25,000	1,000	10,098	606			151,540	10,607
Sardines, fresh					2,000	80		
Sea bass, fresh	33,142	1,320			3,000	120		
Shad, fresh							13,224	793
Smelt, fresh	269,150	6,340	83,258	3,330	17,805	710		
Sturgeon, fresh	30,240	1,200					4,886	293
Yellow-tail, fresh					5,000	200		
Other fish, fresh and salted	248,087	3,572	19,280	690	2,000	80	200,726	4,821
Abalone meats and shells			3,850	73				
Octopus and squid			468,000	37,440				
Clams, hard	32,060	690						
Clams, soft	11,100	109						
Shrimp and prawn	1,225,628	55,693						
Terrapin and frogs	11,250	3,000						
Algæ			5,800	232				
Total	2,721,319	91,444	2,183,255	79,581	53,251	2,087	413,958	18,146

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	5,000	$240						
Flounders, fresh	69,674	2,737					5,500	$220
Mackerel, fresh	9,845	488						
Rockfish, fresh	126,528	4,945					3,375	135
Rockfish, salted	3,215	211						
Salmon, chinook, fresh	13,552	610	28,760	$720	1,973,400	$78,936	26,810	1,610
Shad, fresh	20,264	810			72,206	2,888		
Smelt, fresh	18,600	745						
Striped bass, fresh					960	240		
Sturgeon, fresh					232,794	6,984		
Total	266,678	10,786	28,760	720	2,279,360	89,048	35,685	1,965

Yield of the fisheries of California in 1889—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	157,793	$6,312	25,116	$875	.....	.....	65,370	$3,250
Barracuda, salted	97,106	3,399	1,000	50	.....	.....	19,520	978
Bonito, fresh	45,030	1,802	1,500	75	.....	.....	23,509	1,174
Bonito, salted	151,310	5,296	.....	.....	.....	.....	2,615	125
Flounders, fresh	7,050	282	16,360	716	748,883	$11,403	7,775	385
Herring, fresh	24,980	998	.....	.....	.....	.....	.....	.....
Mackerel, fresh	10,030	401	95,070	3,550	.....	.....	4,845	240
Perch, fresh	22,775	913	.....	.....	.....	.....	.....	.....
Rockfish, fresh	35,000	1,400	79,000	3,065	.....	.....	.....	.....
Rockfish, salted	.....	.....	4,000	200	.....	.....	4,588	225
Sardines, fresh	7,000	280	.....	.....	.....	.....	.....	.....
Sea bass, fresh	11,748	470	52,180	1,820	.....	.....	11,908	595
Sea bass, salted	.....	.....	2,500	125	.....	.....	.....	.....
Smelt, fresh	12,110	485	28,060	980	218,910	3,485	6,190	310
Yellow-tail, fresh	122,864	4,480	.....	.....	.....	.....	25,396	1,265
Yellow-tail, salted	53,081	1,858	.....	.....	.....	.....	5,162	258
Other fish, fresh and salted	63,309	2,529	.....	.....	315,665	4,564	19,387	948
Abalone meats and shells	27,540	1,087	.....	.....	.....	.....	228,879	5,877
Clams, hard	420,000	3,000	.....	.....	.....	.....	.....	.....
Shrimp and prawn	.....	.....	.....	.....	1,532,034	69,616	.....	.....
Spiny lobster	48,158	1,203	.....	.....	.....	.....	110,300	3,309
Hair-seal and sea-lion pelts	.....	1,000	.....	195	.....	.....	.....	423
Sea-otter pelts	.....	.....	.....	.....	.....	.....	.....	3,000
Whale oil	.....	.....	30,000	1,000	.....	.....	.....	.....
Seal oil	.....	.....	3,210	107	.....	.....	4,200	224
Algæ	.....	.....	.....	.....	.....	.....	14,370	575
Total	1,316,893	37,195	337,996	12,758	2,815,492	89,068	554,014	23,161

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh	122,510	$2,447	.....	.....	.....	.....	122,510	$2,447
Barracuda, fresh	.....	.....	.....	.....	10,862	$490	383,088	16,381
Barracuda, salted	.....	.....	.....	.....	.....	.....	117,626	4,427
Bonito, fresh	.....	.....	.....	.....	10,580	405	80,619	3,456
Bonito, salted	.....	.....	.....	.....	.....	.....	153,934	5,421
Carp, fresh	.....	.....	.....	.....	.....	.....	51,214	1,734
Cod, salted	1,463,424	36,587	.....	.....	.....	.....	1,463,424	36,587
Coltus-cod, fresh	110,004	4,001	.....	.....	.....	.....	131,044	4,736
Flounders, fresh	1,542,040	43,800	.....	.....	2,130	87	3,657,990	87,331
Flounders, salted	.....	.....	.....	.....	.....	.....	67,880	2,715
Herring, fresh	1,942,225	52,325	.....	.....	.....	.....	2,572,811	66,101
Kingfish, fresh	8,460	254	.....	.....	.....	.....	8,460	254
Mackerel, fresh	.....	.....	.....	.....	.....	.....	315,253	13,249
Perch, fresh	197,125	9,856	.....	.....	.....	.....	353,849	15,908
Rockfish, fresh	620,742	28,066	.....	.....	10,211	408	2,065,678	63,119
Rockfish, salted	.....	.....	.....	.....	.....	.....	42,553	1,866
Salmon, chinook, fresh	1,003,503	40,140	118,145	$2,955	.....	.....	6,765,430	271,092
Salmon, silver, fresh	.....	.....	.....	.....	.....	.....	1,365,729	40,826
Salmon, silver, salted	.....	.....	.....	.....	.....	.....	435,600	17,324
Salmon, steelhead, fresh	.....	.....	.....	.....	.....	.....	440,921	10,506
Sardines, fresh	1,070,000	21,400	.....	.....	.....	.....	1,097,397	22,429
Sea bass, fresh	325,000	13,000	.....	.....	4,760	188	452,847	17,957
Sea bass, salted	.....	.....	.....	.....	.....	.....	2,500	125
Shad, fresh	61,072	2,443	.....	.....	.....	.....	203,788	10,833
Smelt, fresh	956,582	32,487	.....	.....	.....	.....	1,915,478	57,492
Striped bass, fresh	1,560	300	.....	.....	.....	.....	16,296	4,073
Sturgeon, fresh	75,320	2,260	.....	.....	.....	.....	693,650	21,250
Yellow-tail, fresh	.....	.....	.....	.....	4,362	165	188,272	7,336
Yellow-tail, salted	.....	.....	.....	.....	.....	.....	58,243	2,116
Other fish, fresh and salted	574,026	10,120	.....	.....	6,733	262	1,717,851	33,277
Abalone meats and shells	30,000	600	.....	.....	.....	.....	310,079	8,089
Octopus and squid	16,100	772	.....	.....	.....	.....	484,100	38,212
Clams, hard	74,900	1,605	.....	.....	.....	.....	570,710	6,232
Clams, soft	4,066,800	11,518	.....	.....	.....	.....	1,118,700	11,897
Oysters	12,309,000	571,525	.....	.....	.....	.....	12,309,000	571,525
Mussels	2,100,000	8,750	.....	.....	.....	.....	2,100,000	8,750
Crabs	1,944,000	76,045	.....	.....	.....	.....	2,030,400	79,045
Shrimp and prawn	1,858,439	86,530	.....	.....	.....	.....	5,535,322	253,617
Spiny lobster	.....	.....	.....	.....	.....	.....	266,458	7,327
Terrapin and frogs	30,000	2,400	.....	.....	.....	.....	41,250	5,400
Hair-seal and sea-lion pelts	.....	.....	.....	.....	.....	.....	.....	2,198
Fur-seal pelts	.....	15,219	.....	.....	.....	.....	.....	15,219
Sea-otter pelts	.....	27,700	.....	.....	.....	.....	.....	30,700
Whale oil	1,480,080	60,952	.....	.....	.....	.....	1,510,080	61,952
Whalebone	119,650	520,478	.....	.....	.....	.....	119,650	520,478
Cod tongues	12,600	882	.....	.....	.....	.....	12,600	882
Seal oil	.....	.....	.....	.....	.....	.....	14,610	619
Algæ	.....	.....	.....	.....	.....	.....	20,170	907
Total	31,205,162	1,684,561	118,145	2,955	49,638	2,005	53,505,055	2,465,317

Table showing by counties and species the yield of the fisheries of California in 1890.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh							142,414	$5,6
Carp, fresh	12,209	$366						
Cultus-cod, fresh					20,280	$710		
Flounders, fresh	285,550	4,283			164,112	3,807	187,583	7,5
Herring, fresh	214,129	3,212			11,150	223	48,000	1,9
Mackerel, fresh							160,174	6,4
Perch, fresh					21,610	539	19,990	8
Rockfish, fresh					24,968	748	57,740	2,3
Salmon, chinook, fresh	1,423,880	56,955	345,250	$10,357				
Salmon, silver, fresh			250,375	4,227	934,577	31,154		
Salmon, silver, salted					167,000	6,680		
Salmon, steelhead, fresh			51,875	777	311,524	6,230		
Sardines, fresh							24,765	9
Sea bass, fresh							14,344	5
Sea bass, salted							3,781	1
Shad, fresh	102,216	4,089			250	25		
Smelt, fresh	148,760	2,231			28,160	704	182,260	7,2
Striped bass, fresh	15,715	3,143						
Sturgeon, fresh	235,522	7,066						
Yellow-tail, fresh							38,260	1,5
Other fish, fresh and salted	221,159	3,456					107,677	4,3
Abalone meats and shells							860	
Clams, hard					42,000	900		
Clams, soft					12,000	300		
Crabs					90,000	3,125		
Shrimp and prawn	947	43,983						
Spiny lobster							107,000	2,8
Hair-seal and sea-lion pelts								2
Seal oil							4,800	1
Total	3,627,087	128,784	647,500	15,361	1,827,631	55,145	1,099,648	42,7

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh			18,658	$1,120	3,000	$120		
Carp, fresh							45,904	$1,60
Cultus-cod, fresh					8,998	350		
Flounders, fresh	629,303	$12,068	123,082	2,162				
Flounders, salted			43,649	1,747				
Herring, fresh	368,951	7,654	3,920	196	8,445	332		
Mackerel, fresh			41,312	2,066	6,000	240		
Perch, fresh	81,997	3,280			5,089	190	5,605	3
Rockfish, fresh			1,245,678	24,902	15,000	600		
Rockfish, salted			18,200	728				
Salmon, chinook, fresh	22,110	880	8,770	526			145,540	10,1
Sardines, fresh					5,035	200		
Sea bass, fresh	30,365	1,200			5,000	200		
Shad, fresh							15,960	9
Smelt, fresh	278,690	6,250	107,184	4,287	20,715	828		
Striped bass, fresh							54	
Sturgeon, fresh	38,170	1,520					3,860	2
Yellow-tail, fresh					10,000	400		
Other fish, fresh and salted	278,100	4,078	24,496	881	2,000	80	212,629	5,1
Abalone meats and shells			4,400	83				
Clams, hard	30,450	655						
Clams, soft	10,080	101						
Shrimp and prawn	1,290,000	58,043						
Terrapin and frogs	12,563	3,350						
Algæ			6,500	260				
Total	3,071,379	99,679	1,645,849	39,258	89,282	3,540	429,552	18,45

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	3,731	$182						
Flounders, fresh	77,770	3,110					6,190	$2
Mackerel, fresh	10,495	478						
Rockfish, fresh	174,805	6,956					4,515	1
Rockfish, salted	3,000	150						
Salmon, chinook, fresh	12,500	550	25,825	$646	1,030,580	$41,3	21,375	1,2
Shad, fresh	24,880	995			57,892	2,316		
Smelt, fresh	21,437	860						
Striped bass, fresh					1,218	244		
Sturgeon, fresh					269,923	8,098		
Total	328,618	13,281	25,825	646	1,359,613	51,881	32,080	1,7

Yield of the fisheries of California in 1890—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	133,200	$5,326	23,705	$720			60,115	$3,000
Barracuda, salted	115,840	4,054						
Bonito, fresh	35,040	1,401					52,617	2,618
Bonito, salted	180,645	6,323	2,200	110			4,572	225
Flounders, fresh	6,078	243	15,040	632	473,085	$7,105	6,208	311
Herring, fresh	29,000	800			354,814	5,120		
Mackerel, fresh	8,190	327	82,310	3,030			3,083	150
Perch, fresh	18,030	721						
Rockfish, fresh	30,000	1,200	75,166	3,010				
Rockfish, salted			5,000	250			4,516	226
Sardines, fresh	5,000	200						
Sea bass, fresh	10,965	440	50,315	1,750			8,585	418
Sea bass, salted			2,800	140				
Smelt, fresh	10,086	403	25,115	875	249,802	3,855	4,787	240
Yellow-tail, fresh	24,000	960					70,343	1,532
Yellow-tail, salted	166,875	5,841					5,393	268
Other fish, fresh and salted	51,210	2,049			347,554	5,142	14,730	675
Abalone meats and shells	55,590	934					114,933	3,942
Octopus and squid	256,000	20,480						
Clams, hard	350,000	2,500						
Shrimp and prawn					1,613,246	73,303		
Spiny lobster	40,370	1,009					130,940	3,928
Hair-seal and sea-lion pelts		875		143				527
Sea-otter pelts								4,000
Whale oil			38,250	1,270				
Cod oil			2,190	73			4,800	256
Algæ							22,845	914
Total	1,517,119	56,086	321,031	12,003	3,032,561	94,915	408,557	21,230

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh	135,000	$2,700					135,000	$2,700
Barracuda, fresh					11,415	$480	395,238	16,645
Barracuda, salted							115,840	4,054
Bonito, fresh					5,726	218	93,383	4,237
Bonito, salted							187,417	6,358
Carp, fresh							58,113	1,974
Codfish, salted	1,782,679	44,567					1,782,679	44,567
Cultus-cod, fresh	147,478	5,573					167,758	6,283
Flounders, fresh	1,545,096	42,909			2,973	116	3,531,158	85,237
Flounders, salted							43,649	1,747
Herring, fresh	2,369,415	35,539					3,398,824	54,996
Kingfish, fresh	10,208	306					10,208	306
Mackerel, fresh							311,564	12,698
Perch, fresh	248,108	12,405					400,429	18,273
Rockfish, fresh	510,430	27,316			15,066	600	2,253,308	67,822
Rockfish, salted							30,716	1,354
Salmon, chinook, fresh	218,426	8,737	125,860	$3,147			3,380,116	134,492
Salmon, silver, fresh							1,184,952	35,381
Salmon, silver, salted							167,000	6,680
Salmon, steelhead, fresh							363,399	7,007
Sardines, fresh	1,280,000	19,200					1,314,800	20,591
Sea bass, fresh	195,000	7,800			4,507	178	319,081	12,560
Sea bass, salted							6,581	291
Shad, fresh	116,942	3,508					318,140	11,891
Smelt, fresh	1,002,603	33,487					2,073,569	61,306
Striped bass, fresh	3,132	626					20,119	4,021
Sturgeon, fresh	65,110	1,953					612,585	18,869
Yellow-tail, fresh					9,980	305	112,583	4,817
Yellow-tail, salted							172,268	6,109
Other fish, fresh and salted	633,200	10,153			2,346	77	1,895,101	36,022
Abalone meats and shells	28,000	560					203,783	5,553
Octopus and squid	11,809	336					267,809	20,816
Clams, hard	89,530	1,920					511,980	5,975
Clams, soft	1,239,900	13,020					1,261,980	13,421
Oysters	12,829,500	592,137					12,829,500	592,137
Mussels	2,700,000	11,250					2,700,000	11,250
Crabs	2,000,000	80,000					2,090,000	83,125
Shrimp and prawn	1,950,900	90,664					5,822,693	266,593
Spiny lobster							278,310	7,747
Terrapin and frogs	35,000	4,200					47,563	7,550
Hair-seal and sea-lion pelts								1,770
Fur-seal pelts		69,816						69,816
Sea-otter pelts		27,300						29,300
Whale oil	2,197,665	103,782					2,235,915	105,052
Whalebone	170,118	680,472					170,118	680,472
Cod tongues	13,800	966					13,800	966
Seal oil							11,790	521
Algæ							29,345	1,174
Total	33,629,049	1,033,202	125,860	3,147	52,913	2,064	53,330,194	2,592,826

Table showing by counties and species the yield of the fisheries of California in 1891.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh							210,001	$6,43
Carp, fresh	14,188	$426						
Cultus-cod, fresh					24,118	$840		
Flounders, fresh					151,018	3,617	157,810	6,31
Herring, fresh	203,130	3,145			12,000	240	68,000	2,72
Mackerel, fresh							326,469	13,05
Perch, fresh					23,650	690	25,091	9
Rockfish, fresh					34,472	1,034	81,192	3,24
Salmon, chinook, fresh	594,006	23,760	308,750	$9,262				
Salmon, silver, fresh			182,500	4,818	890,946	20,698		
Salmon, silver, salted					116,200	4,448		
Salmon, steelhead, fresh			18,750	280	296,981	5,940		
Sardines, fresh							66,007	1,32
Sea bass, fresh							18,206	72
Sea bass, salted							4,301	17
Shad, fresh	108,011	4,320			166	16		
Smelt, fresh	141,420	2,167			32,000	800	175,965	7,03
Striped bass, fresh	23,932	3,590						
Sturgeon, fresh	269,725	8,092						
Yellow-tail, fresh							67,690	2,70
Other fish, fresh and salted	213,810	3,422					118,950	5,02
Abalone meats and shells							5,135	8
Clams, hard					47,250	1,012		
Clams, soft					15,000	375		
Crabs					98,100	3,406		
Shrimp and prawn	813,806	36,967						
Spiny lobster							102,125	2,68
Total	2,382,028	85,889	510,000	14,360	1,741,895	52,116	1,427,542	52,52

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh			13,235	$785	2,000	$80		
Carp, fresh							45,430	$1,59
Flounders, fresh	401,395	$7,017	190,510	3,810	6,710	257		
Flounders, salted			41,071	1,644				
Herring, fresh	320,541	6,050			6,498	255		
Mackerel, fresh			32,734	1,637	3,000	120		
Perch, fresh	55,008	2,200			3,365	120	4,553	27
Rockfish, fresh			758,578	15,172	7,000	280		
Rockfish, salted			19,472	760				
Salmon, chinook, fresh	15,035	600	7,999	480			76,112	5,32
Sardines, fresh	3,561	142						
Sea bass, fresh	15,482	610			3,000	120		
Shad, fresh							17,516	1,05
Smelt, fresh	242,090	5,048	76,985	3,080	18,115	724		
Striped bass, fresh							157	2
Sturgeon, fresh	15,946	630					3,250	195
Yellow-tail, fresh					5,000	200		
Other fish, fresh and salted	264,840	3,924	16,920	610	2,000	80	228,445	5,566
Abalone meats and shells			3,700	66				
Octopus and squid			300,760	23,960				
Clams, hard	28,700	615						
Clams, soft	10,380	106						
Shrimp and prawn	1,085,175	49,289						
Terrapin and frogs	12,262	3,270						
Algæ			7,780	310				
Total	2,470,415	79,501	1,469,735	52,314	56,688	2,236	375,463	14,928

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	4,356	$212						
Flounders, fresh	71,151	2,846					4,900	$196
Mackerel, fresh	12,855	592						
Rockfish, fresh	183,084	7,260					4,264	171
Rockfish, salted	5,130	257						
Salmon, chinook, fresh	15,260	690	29,110	$730	694,181	$27,767	35,656	2,199
Shad, fresh	30,120	1,205			58,730	2,350		
Smelt, fresh	25,661	1,226						
Striped bass, fresh					2,205	340		
Sturgeon, fresh					366,380	10,991		
Total	347,611	14,293	29,110	730	121,565	41,448	45,820	2,566

Yield of the fisheries of California in 1891—Continued.

Species.	Los Angeles.		San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	210,001	$6,430	229,755	$9,188	49,800	$1,750			58,000	$2,900
Barracuda, salted			113,542	3,974	5,500	275				
Bonito, fresh			59,960	2,386					40,[illegible]	2,000
Bonito, salted			169,783	5,949	1,000	50			3,701	180
Flounders, fresh	157,810	6,31[illegible]	5,059	203	21,346	955	451,400	$6,871	7,010	348
Herring, fresh	68,000	2,72[illegible]	35,230	1,410			338,550	4,977		
Mackerel, fresh	326,469	13,05[illegible]	14,960	599	122,890	4,560			5,975	297
Rockfish, fresh	25,091	9[illegible]	23,768	951						
Rockfish, salted	81,192	3,24[illegible]	62,000	2,480	129,720	4,970				
Salmon, chinook, fresh					1,500	75			3,117	166
Sea bass, fresh			8,000	320						
Sea bass, salted			12,360	495	88,970	3,110			9,015	451
Shad, fresh					17,000	850				
Smelt, fresh	66,007	1,32[illegible]	15,735	630	19,930	687	234,700	3,720	7,790	388
Yellow-tail, fresh	18,206	72[illegible]	59,000	2,360					20,015	1,000
Yellow-tail, salted	4,301	17[illegible]	63,461	2 230					4,632	231
Other fish, fresh and salted			84,630	3,380			329,120	4,745	17,084	842
Abalone meats and shells	175,965	7,03[illegible]	52,120	1,172					241,826	6,248
Clams, hard			280,000	2,000						
Shrimp and prawn							1,356,345	61,610		
Spiny lobster	67,690	2,70[illegible]	25,000	625					145,120	4,355
Fur-seal and sea-lion pelts	118,950	5,02[illegible]		750		359				2,097
Sea-otter pelts	5,135	[illegible]								1,500
Whale oil					36,450	1,220				
Seal oil					5,490	183			4,500	240
Algæ									11,361	455
Total	102,125	2,68[illegible]	1,314,303	41,102	499,596	19,044	2,710,115	81,923	579,338	23,698
	1,427,542	52,52[illegible]								

Species.	Sacramento.		San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh			145,000	$2,114					145,000	$2,114
Atka mackerel, salted			64,800	4,860					64,800	4,860
Barracuda, fresh							8,610	$372	575,751	21,717
Barracuda, salted									119,042	4,249
Bonito, fresh							6,318	240	106,410	4,626
Bonito, salted									174,484	6,179
Carp, fresh	45,430	$1,59[illegible]							59,618	2,016
Codfish, salted			2,047,911	51,303					2,047,911	51,303
Cultus-cod, fresh			189,500	6,799					213,618	7,639
Flounders, fresh			1,599,784	44,693			3,896	155	3,071,989	77,280
Flounders, salted	4,553	27[illegible]							41,071	1,644
Herring, fresh			2,773,126	29,774					3,757,075	48,571
Kingfish, fresh			24,080	963					24,080	963
Mackerel, fresh	76,112	5,32[illegible]							518,883	20,863
Perch, fresh			189,426	5,683					325,455	10,906
Rockfish, fresh			619,502	24,179			13,200	526	1,893,072	59,325
Rockfish, salted	17,516	1,05[illegible]							29,219	1,258
Salmon, chinook, fresh			448,322	17,933	115,623	$2,890			2,341,045	91,639
Salmon, silver, fresh	157	2[illegible]							1,073,446	34,516
Salmon, silver, salted	2,250	19[illegible]							116,200	4,448
Salmon, steelhead, fresh									315,731	6,220
Sardines, fresh	228,445	5,56[illegible]	860,000	17,200					937,568	18,988
Sea bass, fresh			220,410	6,710			4,815	190	372,258	12,414
Sea bass, salted									21,301	1,022
Shad, fresh			230,460	6,914					445,006	15,856
Smelt, fresh			1,135,603	39,114					2,126,084	64,623
Striped bass, fresh			4,320	648					30,674	4,602
Sturgeon, fresh			72,250	2,305					727,551	22,213
Yellow-tail, fresh							9,276	323	160,981	6,591
Yellow-tail, salted	375,463	14,02[illegible]	110,658	3,873					178,751	6,334
Other fish, fresh and salted			624,465	10,268			2,730	108	1,902,992	37,971
Abalone meats and shells	Sonoma.								302,781	7,572
Octopus and squid			14,150	363					314,910	24,323
Clams, hard	Pounds.	Value.	94,850	2,033					450,800	5,660
Clams, soft			1,489,980	15,396					1,515,360	15,877
Oysters			13,387,800	618,455					13,387,800	618,455
Mussels			2,998,080	12,500					2,998,080	12,500
Crabs			2,250,000	90,000					2,348,100	93,406
Shrimp and prawn	4,900	$196	1,637,614	75,735					892,940	223,001
Spiny lobster									272,245	7,668
Terrapin and frogs	4,264	171	37,500	4,500					49,702	7,770
Fur-seal and sea-lion pelts										3,206
Fur-seal pelts	33,656	2,199		134,220						134,220
Sea-otter pelts				30,200						31,700
Whale oil			1,727,535	69,970					1,763,985	71,190
Whalebone			223,771	1,118,855					223,771	1,118,885
Cod oil			975	65					975	65
Seal oil									9,990	423
Cod tongues	45,820	2,566	16,200	1,134					16,200	1,134
Algæ									19,141	765
Total			35,238,514	2,448,849	115,623	2,890	48,905	1,914	52,483,906	3,031,430

Table showing by counties and species the yield of the fisheries of California in 1892.

Species.	Contra Costa.		Del Norte.		Humboldt.		Los Angeles.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh							6,430	$257
Carp, fresh	21,342	$640						
Cultus-cod, fresh					30,000	$1,050		
Flounders, fresh	303,350	4,550			160,873	4,267	156,548	6,262
Herring, fresh	227,515	3,412			13,000	260	41,000	1,640
Mackerel, fresh							313,837	12,553
Perch, fresh					28,500	560	24,841	993
Rockfish, fresh					50,000	1,500	57,755	2,310
Salmon, chinook, fresh	1,037,331	41,493	133,563	$3,587				
Salmon, silver, fresh			99,124	1,534	782,638	26,098		
Salmon, silver, salted					39,000	1,560		
Salmon, steelhead, fresh			49,563	867	260,879	5,217		
Sardines, fresh							41,804	836
Sea bass, fresh							19,212	769
Shad, fresh	139,364	4,181			100	10		
Smelt, fresh	151,675	2,275			42,250	1,056	187,430	7,497
Striped bass, fresh	38,947	4,674						
Sturgeon, fresh	323,855	9,715						
Yellow-tail, fresh							66,347	2,654
Other fish, fresh and salted	255,470	4,272					111,479	4,459
Abalone meats and shells					7,775	162		
Clams, hard					52,500	1,125		
Clams, soft					17,400	435		
Crabs					112,320	3,900		
Shrimp and prawn	885,010	40,195						
Spiny lobster							128,425	3,340
Hair-seal and sea-lion pelts								33
Total	3,383,859	115,407	282,250	5,988	1,597,235	46,200	1,155,168	44,033

Species.	Marin.		Monterey.		Orange.		Sacramento.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Carp, fresh							44,320	$1,329
Flounders, fresh	442,468	$7,587	189,820	$3,796	11,122	$440		
Flounders, salted			43,837	1,754				
Herring, fresh	338,766	5,967			6,000	240		
Mackerel, fresh			6,209	286				
Perch, fresh	50,000	2,000			5,000	200	5,668	340
Rockfish, fresh			725,380	14,508	4,320	173		
Salmon, chinook, fresh	12,000	480	6,915	415			81,112	5,679
Sardines, fresh					5,000	200		
Sea bass, fresh	13,000	520						
Shad, fresh							21,579	1,295
Smelt, fresh	252,065	5,035	74,868	2,995	25,621	1,025		
Striped bass, fresh							199	7
Sturgeon, fresh	20,000	800					3,820	955
Yellow-tail, fresh					3,680	147		
Other fish, fresh and salted	303,519	4,650	14,058	507			243,497	5,870
Abalone meats and shells			4,189	85				
Octopus and squid			357,622	28,610				
Clams, hard	33,110	720						
Clams, soft	11,040	110						
Shrimp and prawn	1,180,020	53,590						
Terrapin and frogs	13,125	3,500						
Algæ			14,835	593				
Total	2,669,113	84,959	1,437,733	53,547	60,743	2,425	400,195	14,975

Species.	Santa Cruz.		Shasta.		Solano.		Sonoma.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Flounders, fresh	71,315	$2,853					5,187	$207
Mackerel, fresh	8,783	399						
Rockfish, fresh	172,220	6,890					3,700	148
Rockfish, salted	2,620	131						
Salmon, chinook, fresh	14,175	640	31,445	$785	944,507	$38,220	28,839	1,730
Shad, fresh	35,000	1,400			87,702	2,631		
Smelt, fresh	52,322	2,090						
Striped bass, fresh					3,910	409		
Sturgeon, fresh	72,545	2,176			217,637	6,529		
Total	428,980	16,579	31,445	785	1,253,756	47,849	37,726	2,085

fornia in 1892.

Los Angeles.	
Pounds.	Value.
6,430	$2
156,548	6,2
41,000	1,6
313,837	12,5
24,841	9
57,755	2,3
128,425	3,3
1,155,168	44,0

Sacramento.	
Pounds.	Value.
44,320	$1,3
5,668	3
81,112	5,6
21,579	1,2
199	
3,820	
243,497	5,8
400,195	14,9

Sonoma.	
Pounds.	Value.
5,187	$2
3,700	1
28,839	1,7
37,726	2,0

Yield of the fisheries of California in 1892—Continued.

Species.	San Diego.		San Luis Obispo.		San Mateo.		Santa Barbara.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Barracuda, fresh	199,760	$7,996						
Barracuda, salted	109,614	3,837						
Bonito, fresh	50,000	2,000					20,000	$1,000
Bonito, salted	171,222	6,070					1,000	50
Flounders, fresh	2,960	117	11,110	$525	505,585	$7,585	6,500	325
Herring, fresh	50,000	2,000			379,190	5,688		
Mackerel, fresh	4,770	191	11,300	456			5,500	275
Perch, fresh	20,000	800						
Rockfish, fresh	50,000	2,000	98,240	3,865				
Rockfish, salted			6,500	325			550	27
Sardines, fresh	3,000	120						
Sea bass, fresh	10,000	400	61,650	3,808			14,000	700
Sea bass, salted			500	25				
Smelt, fresh	18,000	720	5,300	186	252,705	3,792	8,000	400
Yellow-tail, fresh	50,000	2,000					35,000	1,750
Yellow-tail, salted	189,607	6,721					1,800	90
Other fish, fresh and salted	158,925	6,360			379,185	5,686	19,450	973
Abalone meats and shells	124,120	3,234					238,463	5,280
Clams, hard	252,000	1,800						
Shrimp and prawn					1,475,020	66,989		
Tiny lobster	20,000	500					164,850	4,646
Fur-seal and sea-lion pelts		660		256				1,021
Sea-otter pelts								1,200
Whale oil			32,100	1,070				
Algæ							13,490	540
Total	1,483,978	47,526	226,700	8,516	2,991,775	89,740	518,603	18,277

Species.	San Francisco.		Tehama.		Ventura.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Anchovies, fresh	150,175	$1,502					150,175	$1,502
Barracuda, fresh					11,000	$440	217,190	8,693
Barracuda, salted							109,614	3,837
Bonito, fresh					7,110	280	77,110	3,280
Bonito, salted							172,222	6,120
Carp, fresh							65,662	2,191
Cod, salted	2,274,565	56,864					2,274,565	56,864
Cultus-cod, fresh	200,670	6,020					2,.,670	7,070
Flounders, fresh	2,312,210	53,789			3,000	120	4,182,048	92,426
Flounders, salted							43,837	1,754
Herring, fresh	3,431,416	36,589					4,486,887	55,796
Kingfish, fresh	40,000	1,201					40,000	1,201
Mackerel, fresh							350,399	14,159
Perch, fresh	201,108	6,033					335,117	10,927
Rockfish, fresh	644,372	19,330			14,000	560	1,819,987	51,282
Rockfish, salted							9,670	483
Salmon, chinook, fresh	1,122,928	44,917	128,389	$3,210			3,541,204	141,155
Salmon, chinook, salted	90,000	3,600					90,000	3,600
Salmon, silver, fresh							881,762	27,632
Salmon, silver, salted							39,000	1,560
Salmon, steelhead, fresh							310,442	6,084
Sardines, fresh	703,130	14,063					752,994	15,237
Sea bass, fresh	135,350	5,414					253,212	9,610
Sea bass, salted					4,000	160	4,500	185
Shad, fresh	242,749	4,855					526,494	14,372
Smelt, fresh	849,568	26,398					1,919,894	53,469
Striped bass, fresh	13,153	1,315					56,209	6,488
Sturgeon, fresh	80,160	2,405					718,017	21,854
Yellow-tail, fresh					8,000	320	163,027	6,872
Yellow-tail, salted							191,407	6,811
Other fish, fresh and salted	729,827	13,253			2,000	80	2,217,410	46,159
Abalone meats and shells	30,000	590					404,547	9,351
Octopus and squid	17,000	429					374,022	29,039
Clams, hard	141,890	2,804					479,500	6,449
Clams, soft	1,988,760	19,888					2,017,200	20,433
Oysters	15,098,700	698,257					15,098,700	698,257
Mussels	2,880,000	12,000					2,880,000	12,000
Crabs	2,750,000	99,000					2,862,320	102,900
Shrimp and prawn	1,773,295	81,043					5,313,345	241,817
Tiny lobster							303,275	8,486
Terrapin and frogs	32,500	4,550					45,625	8,050
Fur-seal and sea-lion pelts								2,267
Fur-seal pelts		167,526						167,526
Sea-otter pelts		34,950						36,150
Whale oil	1,542,743	61,053					1,574,843	62,123
Whalebone	197,339	937,371					197,339	937,371
Cod sounds	600	42					600	42
Cod tongues	27,500	1,925					27,500	1,925
Algæ							28,325	1,133
Total	39,701,708	2,418,976	128,389	3,210	49,110	1,960	57,838,466	3,022,991

Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892.

Apparatus and species.	Los Angeles.		San Diego.		San Francisco.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1889.								
Lines:								
Barracuda, salted			60,683	$2,124			60,083	$2,12
Bonito, salted			95,184	3,331			95,184	3,33
Cod, salted					1,463,424	$36,587	1,463,424	36,58
Yellow-tail, salted			86,864	3,040			86,864	3,04
Total			242,731	8,495	1,463,424	36,587	1,706,155	45,08
Paranzella nets:								
Flounders, fresh					352,320	8,808	352,320	8,80
Kingfish, fresh					8,460	254	8,460	25
Rockfish, fresh					33,312	999	33,312	99
Other fish, fresh					14,760	443	14,760	44
Prawn, fresh					13,218	1,980	13,218	1,98
Octopus					1,100	22	1,100	2
Total					423,170	12,506	423,170	12,50
Miscellaneous:								
Abalone meat and shells			27,540	1,087			27,540	1,08
Hair-seal pelts				1,000				1,00
Fur-seal pelts						15,219		15,21
Sea-otter pelts						27,700		27,70
Whale oil					1,480,080	60,952	1,480,080	60,95
Whalebone					119,650	520,478	119,650	520,47
Cod tongues					12,600	882	12,600	88
Total			27,540	2,087	1,612,330	625,231	1,639,870	627,31
Grand total			270,271	10,582	3,498,924	674,324	3,769,195	684,90
1890.								
Lines:								
Barracuda, salted			72,400	2,534			72,400	2,53
Bonito, salted			112,860	3,950			112,860	3,95
Cod, salted					1,782,679	44,567	1,782,679	44,56
Yellow-tail, salted			104,340	3,652			104,340	3,65
Total			289,600	10,136	1,782,679	44,567	2,072,279	54,70
Paranzella nets:								
Flounders, fresh					347,112	8,678	347,112	8,67
Kingfish, fresh					10,208	306	10,208	30
Rockfish, fresh					35,320	1,060	35,320	1,06
Other fish, fresh					13,530	406	13,530	40
Prawn fresh					9,845	1,770	9,845	1,77
Octopus					1,809	36	1,809	3
Total					417,824	12,256	417,824	12,25
Miscellaneous:								
Abalone meat and shells			55,590	934			55,590	93
Hair-seal pelts				875				87
Fur-seal pelts						69,816		69,81
Sea-otter pelts						27,300		27,30
Whale oil					2,197,665	103,782	2,197,665	103,78
Whalebone					170,118	680,472	170,118	680,47
Cod tongues					13,800	966	13,800	96
Total			55,590	1,809	2,381,583	882,336	2,437,173	884,14
Grand total			345,190	11,945	4,582,086	939,159	4,927,276	951,10
1891.								
Lines:								
Atka mackerel, salted					64,800	4,860	64,800	4,86
Barracuda, fresh	2,100	$84					2,100	8
Barracuda, salted			70,964	2,484			70,964	2,48
Bonito, salted			102,234	3,578			102,234	3,57
Cod, salted					2,047,911	51,393	2,047,911	51,39
Mackerel, fresh	12,150	486					12,150	48
Yellow-tail, fresh	2,500	100					2,500	10
Yellow-tail, salted					110,658	3,873	110,658	3,87
Total	16,750	670	173,198	6,062	2,223,369	60,126	2,413,317	66,85

Statement by counties, apparatus, and species of the yield of the vessel fisheries of California in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Los Angeles.		San Diego.		San Francisco.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1891.								
Paranzella nets:								
Flounders, fresh					621,845	$18,656	621,845	$18,656
Kingfish, fresh					24,080	963	24,080	963
Rockfish, fresh					62,260	2,490	62,260	2,490
Other fish, salted					46,690	1,401	46,690	1,401
Prawn, fresh					6,382	1,150	6,382	1,150
Octopus					6,150	123	6,150	123
Total					767,407	24,783	767,407	24,783
Miscellaneous:								
Abalone meat and shells			52,120	$1,172			52,120	1,172
Hair-seal pelts				750				750
Fur-seal pelts						134,220		134,220
Sea-otter pelts						30,200		30,200
Whale oil					1,727,535	69,970	1,727,535	69,970
Whalebone					223,771	1,118,855	223,771	1,118,855
Cod oil					975	65	975	65
Cod tongues					16,200	1,134	16,200	1,134
Total			52,120	1,922	1,968,481	1,354,444	2,020,601	1,356,366
Grand total	16,750	$670	225,318	7,984	4,959,257	1,439,353	5,201,325	1,448,007
1892.								
Seines:								
Salmon, salted					90,000	3,600	90,000	3,600
Lines:								
Barracuda, fresh	6,430	257					6,430	257
Barracuda, salted			68,510	2,397			68,510	2,397
Bonito, salted			96,558	3,380			96,558	3,380
Cod, salted					2,274,565	56,864	2,274,565	56,864
Mackerel, fresh	36,435	1,456					36,435	1,456
Yellow-tail, fresh	7,040	282					7,040	282
Yellow-tail, salted			108,975	3,814			108,975	3,814
Total	49,905	1,995	274,043	9,591	2,274,565	56,864	2,598,513	68,450
Paranzella nets:								
Flounders, fresh					1,409,192	35,229	1,409,192	35,229
Kingfish, fresh					40,000	1,201	40,000	1,201
Rockfish, fresh					116,952	3,508	116,952	3,508
Other fish, fresh					74,240	2,228	74,240	2,228
Prawn, fresh					3,270	654	3,270	654
Octopus					8,000	159	8,000	159
Total					1,651,654	42,979	1,651,654	42,979
Miscellaneous:								
Abalone meat and shells			124,210	3,234			124,210	3,234
Hair-seal pelts				660				660
Fur-seal pelts						167,526		167,526
Sea-otter pelts						34,950		34,950
Whale oil					1,542,743	61,053	1,542,743	61,053
Whalebone					197,339	937,371	197,339	937,371
Cod sounds					600	42	600	42
Cod tongues					27,500	1,925	27,500	1,925
Total			124,210	3,894	1,768,182	1,202,867	1,892,392	1,206,761
Grand total	49,905	1,995	398,253	13,485	5,784,401	1,306,310	6,232,559	1,321,790

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	30,140	$600								
Gill nets and trammel nets:										
Monterey			28,056	$1,680						
San Diego			36,793	1,472			10,680	$427		
San Francisco	92,370	1,847								
Santa Barbara							20,675	1,033	2,615	$125
Total	92,370	1,847	64,849	3,152			31,355	1,460	2,615	125
Lines:										
Los Angeles			88,891	3,454						
Orange			2,000	80						
San Diego			121,000	4,840	36,423	$1,275	34,350	1,375	56,135	1,965
San Luis Obispo			25,116	875	1,000	50	1,500	75		
Santa Barbara			65,370	3,250	19,520	978	2,834	141		
Santa Cruz			5,000	240						
Ventura			10,862	490			10,580	405		
Total			318,239	13,229	56,943	2,303	49,264	1,996	56,135	1,965
Grand total	122,510	2,447	383,088	16,381	56,943	2,303	80,619	3,456	58,750	2,090

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					125,450	$2,509			10,000	$200
Los Angeles					3,090	123			41,000	1,640
Marin					65,395	2,616			26,915	1,077
Orange					1,415	50			2,280	90
Sacramento	10,064	$353								
San Diego					5,050	202			18,150	725
San Francisco					224,106	8,964			386,541	11,596
Santa Barbara					3,540	172				
Sonoma					5,500	220				
Total	10,064	353			433,546	14,840			484,886	15,328
Gill nets and trammel nets:										
Los Angeles									4,000	160
Marin									53,835	2,153
Monterey					163,208	3,260				
San Diego									6,830	273
San Francisco			16,670	$667	449,499	18,053			1,159,624	34,789
Santa Cruz					22,650	906				
Total			16,670	667	635,357	22,219			1,224,289	37,375
Bag nets and paranzella nets:										
Contra Costa					256,692	3,850			192,519	2,888
Los Angeles					61,502	2,460			16,000	640
Marin					342,258	5,240			256,692	3,859
Monterey					61,710	1,235	47,500	$1,900		
Orange					2,874	100			2,365	80
San Diego					2,000	80				
San Francisco			15,100	604	513,400	7,700			396,060	5,940
San Luis Obispo					10,360	506				
San Mateo					748,883	11,403				
Santa Cruz					33,100	1,324				
Ventura					2,130	87				
Total			15,100	604	2,034,909	33,985	47,500	1,900	863,636	13,398
Fyke nets and minor nets:										
Contra Costa	11,914	357								
Sacramento	29,236	1,024								
Total	41,150	1,381								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			21,040	$735	6,990	$630				
Los Angeles					113,230	4,529				
Monterey					53,572	1,070	20,380	$815		
Orange					1,192	45				
San Francisco			78,234	2,730	2,715	275				
San Luis Obispo					6,000	210				
Santa Barbara					4,245	213				
Santa Cruz					13,924	507				
Total			99,274	3,465	201,858	7,479	20,380	815		
Grand total	51,214	$1,734	131,044	4,736	3,305,670	78,523	67,880	2,715	2,572,811	$66,101

Counties and apparatus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt			20,150	$504						
Los Angeles			10,200	408					15,756	$563
Marin			53,410	2,133						
Orange			1,000	40					2,000	80
Sacramento			972	59						
San Diego			16,193	648					7,000	280
San Francisco			197,125	9,856					1,070,000	21,400
Santa Barbara							1,200	$60		
Santa Cruz							3,215	211		
Total			299,050	13,648			4,415	271	1,094,756	22,323
Gill nets and trammel nets:										
Los Angeles	25,105	$1,004								
Marin			36,587	1,467						
Monterey	5,500	275			538,325	$10,767				
San Diego	3,000	120								
San Francisco					95,405	4,770				
Santa Barbara	2,583	125								
Santa Cruz	2,762	130			28,000	1,120				
Total	38,950	1,654	36,587	1,467	661,730	16,657				
Bag nets and paranzella nets:										
Los Angeles			7,000	280	13,988	559			2,641	106
Orange			1,320	52						
San Diego			6,682	265						
San Francisco					100,405	40,016				
Santa Cruz					35,250	1,410				
Ventura					5,380	216				
Total			14,902	597	155,023	6,201			2,641	106
Fyke nets and minor nets:										
Sacramento			3,310	196						
Lines:										
Humboldt					26,115	755				
Los Angeles	92,318	3,693			31,966	1,279				
Monterey	69,540	3,478			574,428	11,500	30,750	1,230		
Orange	3,000	120			6,000	240				
San Diego	7,030	281			35,000	1,400				
San Francisco					391,620	18,281				
San Luis Obispo	95,070	3,550			79,000	3,065	4,000	200		
Santa Barbara	2,262	115					3,388	165		
Santa Cruz	7,083	358			63,278	2,415				
Sonoma					3,375	135				
Ventura					4,831	192				
Total	276,303	11,595			1,215,613	39,262	38,138	1,595		
Grand total	315,253	13,249	353,849	15,908	2,032,366	62,120	42,553	1,866	1,097,397	22,429

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte	105,458	$2,676	189,205	$3,543	48,750	$728	.....	.....
Humboldt	.....	.....	580,441	17,414	193,480	5,804	225,400	$8,916
Shasta	28,760	720	.....	.....	.....	.....	.....	.....
Tehama	118,145	2,955	.....	.....	.....	.....	.....	.....
Total	252,363	6,351	769,646	20,957	242,230	6,532	225,400	8,916
Gill nets and trammel nets:								
Contra Costa	3,195,747	127,830	.....	.....	.....	.....	.....	.....
Del Norte	113,417	3,402	.....	.....	.....	.....	.....	.....
Humboldt	.....	.....	596,074	19,869	198,691	3,974	210,200	8,408
Marin	25,000	1,000	.....	.....	.....	.....	.....	.....
Sacramento	151,540	10,607	.....	.....	.....	.....	.....	.....
San Francisco	1,003,503	40,140	.....	.....	.....	.....	.....	.....
Solano	1,973,400	78,936	.....	.....	.....	.....	.....	.....
Sonoma	26,810	1,610	.....	.....	.....	.....	.....	.....
Total	6,489,417	263,525	596,074	19,869	198,691	3,974	210,200	8,408
Lines:								
Monterey	20,098	606	.....	.....	.....	.....	.....	.....
Santa Cruz	13,552	610	.....	.....	.....	.....	.....	.....
Total	23,650	1,216	.....	.....	.....	.....	.....	.....
Grand total	6,765,430	271,092	1,365,720	40,826	440,921	10,506	435,600	17,324

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt	.....	.....	.....	.....	300	$30	29,500	$738	.....	.....
Los Angeles	.....	.....	.....	.....	.....	.....	90,976	3,639	.....	.....
Marin	.....	.....	.....	.....	.....	.....	46,520	1,860	.....	.....
Orange	.....	.....	.....	.....	.....	.....	9,385	375	.....	.....
San Diego	.....	.....	.....	.....	.....	.....	9,000	360	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	139,978	5,599	.....	.....
Santa Barbara	.....	.....	.....	.....	.....	.....	3,380	168	.....	.....
Total	.....	.....	.....	.....	300	30	328,739	12,739	.....	.....
Gill nets and trammel nets:										
Contra Costa	.....	.....	.....	.....	96,722	3,869	.....	.....	13,776	$3,443
Los Angeles	2,777	$111	.....	.....	.....	.....	35,325	1,413	.....	.....
Marin	33,142	1,320	.....	.....	.....	.....	43,500	1,740	.....	.....
Monterey	.....	.....	.....	.....	.....	.....	83,258	3,330	.....	.....
Sacramento	.....	.....	.....	.....	13,224	793	.....	.....	.....	.....
San Diego	3,000	120	.....	.....	.....	.....	3,110	125	.....	.....
San Francisco	325,000	13,000	.....	.....	61,072	2,443	559,914	22,396	1,560	390
San Luis Obispo	52,180	1,820	2,500	$125	.....	.....	28,060	980	.....	.....
Santa Barbara	5,418	275	.....	.....	.....	.....	2,810	142	.....	.....
Santa Cruz	.....	.....	.....	.....	20,264	810	18,600	745	.....	.....
Solano	.....	.....	.....	.....	72,206	2,888	.....	.....	960	240
Total	421,517	16,646	2,500	125	263,488	10,803	774,577	30,871	16,296	4,073
Bag nets and paranzella nets:										
Contra Costa	.....	.....	.....	.....	.....	.....	130,012	2,070	.....	.....
Los Angeles	.....	.....	.....	.....	.....	.....	19,000	760	.....	.....
Marin	.....	.....	.....	.....	.....	.....	179,130	2,740	.....	.....
Orange	.....	.....	.....	.....	.....	.....	8,420	335	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	256,690	4,492	.....	.....
San Mateo	.....	.....	.....	.....	.....	.....	218,910	3,485	.....	.....
Total	.....	.....	.....	.....	.....	.....	812,162	13,882	.....	.....
Lines:										
Los Angeles	8,332	333	.....	.....	.....	.....	.....	.....	.....	.....
Orange	3,000	120	.....	.....	.....	.....	.....	.....	.....	.....
San Diego	8,748	350	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	6,490	320	.....	.....	.....	.....	.....	.....	.....	.....
Ventura	4,760	188	.....	.....	.....	.....	.....	.....	.....	.....
Total	31,330	1,311	.....	.....	.....	.....	.....	.....	.....	.....
Grand total	452,847	17,957	2,500	125	263,788	10,833	1,915,478	57,492	16,296	4,073

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1889—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte									343,413	$6,947
Humboldt									1,184,721	36,115
Los Angeles							10,362	$654	177,384	7,027
Marin									192,240	7,670
Orange									16,080	635
Sacramento							51,087	1,257	62,123	1,669
San Diego							17,900	716	73,293	2,931
San Francisco							7,075	406	2,054,965	58,421
Santa Barbara			13,280	$660	2,750	$138	15,432	750	39,582	1,948
Santa Cruz									3,215	211
Shasta									28,760	720
Sonoma									5,500	220
Tehama									118,145	2,955
Total			13,280	660	2,750	138	107,856	3,783	4,299,421	127,469
Gill nets and trammel nets:										
Contra Costa	262,919	$7,888					1,620	65	3,570,784	143,095
Del Norte									113,417	3,402
Humboldt									1,004,965	32,251
Los Angeles									67,207	2,688
Marin	30,240	1,200							222,304	8,880
Monterey							12,060	470	830,407	19,782
Sacramento	4,886	293							169,650	11,693
San Diego							17,409	693	80,822	3,230
San Francisco	18,830	565					29,921	935	3,813,368	139,995
San Luis Obispo									82,740	2,925
Santa Barbara									34,101	1,700
Santa Cruz									92,276	3,711
Solano	174,596	5,238							2,221,162	87,302
Sonoma									26,810	1,610
Total	491,471	15,184					61,010	2,163	12,330,013	462,264
Bag nets and paranzella nets:										
Contra Costa							192,622	2,795	771,845	11,603
Los Angeles							33,212	1,328	153,343	6,133
Marin							248,687	3,572	1,026,767	15,402
Monterey							7,220	220	116,430	3,355
Orange									14,979	567
San Diego									8,582	345
San Francisco							441,970	6,679	1,723,625	29,431
San Luis Obispo									10,360	506
San Mateo							315,665	4,564	1,283,458	19,452
Santa Cruz									68,350	2,734
Ventura							6,733	262	14,243	565
Total							1,246,109	19,420	5,191,982	90,093
Fyke nets and minor nets:										
Contra Costa							12,022	361	23,936	718
Sacramento							149,639	3,564	182,185	4,784
Total							161,661	3,925	206,121	5,502
Lines:										
Contra Costa	87,491	2,625							87,491	2,625
Humboldt									54,145	2,120
Los Angeles			30,650	1,226			12,200	488	377,587	15,002
Monterey									758,768	18,699
Orange			5,000	200			2,000	80	22,192	885
San Diego			36,000	1,440	53,081	1,858	28,000	1,120	415,767	15,904
San Francisco	56,490	1,695					80,300	1,657	609,359	24,638
San Luis Obispo									211,686	8,025
Santa Barbara			12,116	605	2,412	120	3,955	198	122,582	6,105
Santa Cruz									102,837	4,130
Solano	58,198	1,746							58,198	1,746
Sonoma									3,375	135
Ventura			4,362	165					35,395	1,440
Total	202,179	6,066	88,128	3,636	55,493	1,978	126,455	3,543	2,859,382	101,454
Grand total	693,650	21,250	101,408	4,296	58,243	2,116	1,703,091	32,834	24,886,919	786,782

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	33,750	$675								
Gill nets and trammel nets:										
Monterey			18,658	$1,120						
San Diego			31,020	1,241			7,960	$318		
San Francisco	101,250	2,025								
Santa Barbara							26,945	1,340	2,425	$113
Total	101,250	2,025	49,678	2,361			34,905	1,658	2,425	113
Lines:										
Los Angeles			142,414	5,697						
Orange			3,000	120						
San Diego			102,180	4,085	43,440	$1,520	27,080	1,083	67,785	2,57
San Luis Obispo			22,705	720					2,200	10
Santa Barbara			60,115	3,000			25,672	1,278	2,147	11
Santa Cruz			3,731	182						
Ventura			11,415	480			5,726	218		
Total			345,560	14,284	43,440	1,520	58,478	2,579	72,132	2,53
Grand total	135,000	2,700	395,238	16,645	43,440	1,520	93,383	4,237	74,557	2,70

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					156,599	$3,132			11,150	$22
Los Angeles					2,637	105			28,000	1,12
Marin					62,180	2,480			28,279	1,13
Orange					2,687	100			4,325	17
Sacramento	11,590	$406								
San Diego					4,263	170			14,000	56
San Francisco					208,370	8,335			485,860	7,28
Santa Barbara					2,813	141				
Sonoma					6,190	248				
Total	11,590	406			445,739	14,711			571,614	10,49
Gill nets and trammel nets:										
Los Angeles									2,500	10
Marin									56,572	2,25
Monterey					188,323	3,800			3,920	1
San Diego									6,000	24
San Francisco			27,538	$1,105	418,572	16,850			1,457,580	21,86
Santa Cruz					20,950	1,078				
Total			27,538	1,105	633,845	21,734			1,526,572	24,06
Bag nets and paranzella nets:										
Contra Costa					285,550	4,283			214,129	3,21
Los Angeles					129,929	5,197			17,500	70
Marin					378,800	5,782			284,100	4,26
Monterey					65,450	1,310	30,534	$1,222		
Orange					4,586	180			4,120	16
San Diego					1,815	73				
San Francisco			22,460	895	567,702	8,716			425,975	6,38
San Luis Obispo					7,040	352				
San Mateo					473,085	7,195			354,814	5,13
Santa Cruz					35,250	1,410				
Ventura					2,073	116				
Total			22,460	895	1,952,180	34,614	30,534	1,222	1,300,638	19,84
Fyke nets and minor nets:										
Contra Costa	12,209	366								
Sacramento	34,314	1,202								
Total	46,523	1,568								

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			20,280	$710	7,513	$675				
Los Angeles					55,017	2,201				
Monterey					57,632	1,152	13,115	$525		
Orange					1,725	70				
San Francisco			97,480	3,573	3,340	330				
San Luis Obispo					8,000	280				
Santa Barbara					3,485	170				
Santa Cruz					15,570	622				
Total			117,760	4,283	152,282	5,500	13,115	525		
Grand total	58,113	$1,974	107,758	6,283	3,184,046	76,550	43,649	1,747	3,398,824	$64,996

Counties and apparatus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt			21,610	$539						
Los Angeles			7,200	288					19,765	$791
Marin			47,915	1,920						
Orange			2,172	80					5,035	200
Sacramento			1,373	83						
San Diego			12,320	493					5,000	200
San Francisco			248,108	12,405					1,280,000	19,200
Santa Barbara							1,087	$54		
Santa Cruz							3,000	150		
Total			340,698	15,808			4,087	204	1,309,800	20,391
Gill nets and trammel nets:										
Los Angeles	35,792	$1,431								
Marin			34,082	1,360						
Monterey					587,340	$11,747				
San Diego	2,680	107								
San Francisco					92,651	4,633				
Santa Barbara	1,463	70								
Santa Cruz	2,945	148			40,575	1,623				
Total	42,880	1,756	34,082	1,360	720,566	18,003				
Bag nets and paranzella nets:										
Los Angeles			12,790	512	17,434	697			5,000	200
Orange			2,917	110						
San Diego			5,710	228						
San Francisco					99,055	3,953				
Santa Cruz					46,825	1,873				
Ventura					7,750	316				
Total			21,417	850	171,064	6,833			5,000	200
Fyke nets and minor nets:										
Sacramento			4,232	255						
Lines:										
Humboldt					24,968	748				
Los Angeles	124,382	4,976			40,306	1,613				
Monterey	41,312	2,066			658,338	13,155	18,200	728		
Orange	6,000	240			15,000	600				
San Diego	5,510	220			30,000	1,200				
San Francisco					383,404	17,670				
San Luis Obispo	82,310	3,030			75,106	3,010	5,000	250		
Santa Barbara	1,620	80					3,429	172		
Santa Cruz	7,550	330			87,405	3,460				
Sonoma					4,515	180				
Ventura					7,316	290				
Total	268,684	10,942			1,326,358	41,926	26,629	1,150		
Grand total	311,564	12,698	400,429	18,273	2,217,988	66,762	30,716	1,354	1,314,800	20,591

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte	149,666	$4,490	250,375	$4,227	51,875	$777		
Humboldt			460,272	15,343	153,423	3,068	91,342	$3,654
Shasta	25,825	646						
Tehama	125,860	3,147						
Total	301,351	8,283	710,647	19,570	205,298	3,845	91,342	3,654
Gill nets and trammel nets:								
Contra Costa	1,423,880	50,955						
Del Norte	195,584	5,867						
Humboldt			474,305	15,811	158,101	3,162	75,658	3,026
Marin	22,110	880						
Sacramento	145,540	10,188						
San Francisco	218,426	8,737						
Solano	1,030,580	41,223						
Sonoma	21,375	1,283						
Total	3,057,495	125,133	474,305	15,811	158,101	3,162	75,658	3,026
Lines:								
Monterey	8,770	526						
Santa Cruz	12,500	550						
Total	21,270	1,076						
Grand total	3,380,116	134,492	1,184,952	35,381	363,399	7,007	167,000	6,680

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					250	$25	28,160	$704		
Los Angeles							90,120	3,605		
Marin							42,060	1,680		
Orange							10,890	435		
San Diego							7,800	312		
San Francisco							141,730	5,669		
Santa Barbara							2,287	115		
Total					250	25	323,047	12,520		
Gill nets and trammel nets:										
Contra Costa					102,216	4,089			15,715	$3,143
Los Angeles			3,781	$151			42,640	1,701		
Marin	30,365	$1,200					41,230	1,640		
Monterey							107,184	4,287		
Sacramento					15,960	958			54	3
San Diego	2,915	119					2,286	91		
San Francisco	195,000	7,800			116,942	3,508	566,022	22,670	3,132	626
San Luis Obispo	50,315	1,750	2,800	140			25,115	875		
Santa Barbara	3,875	192					2,500	125		
Santa Cruz					24,880	995	21,437	860		
Solano					57,892	2,316			1,218	243
Total	282,470	11,061	6,581	291	317,890	11,866	809,314	32,255	20,119	4,025
Bag nets and paranzella nets:										
Contra Costa							148,760	2,231		
Los Angeles							49,500	1,980		
Marin							195,400	2,930		
Orange							9,825	393		
San Francisco							293,951	5,142		
San Mateo							243,802	3,855		
Total							941,238	16,531		
Lines:										
Los Angeles	14,344	574								
Orange	5,000	200								
San Diego	8,050	321								
Santa Barbara	4,710	226								
Ventura	4,507	178								
Total	36,611	1,499								
Grand total	319,081	12,560	6,581	291	318,140	11,891	2,073,599	61,306	20,119	4,025

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1890—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte									451,916	$9,404
Humboldt									922,806	26,088
Los Angeles							19,185	$707	166,877	6,676
Marin									180,434	7,211
Orange									25,109	987
Sacramento							53,542	1,310	66,505	1,799
San Diego							15,595	624	58,978	2,359
San Francisco							6,860	363	2,404,678	53,935
Santa Barbara			15,778	$709	2,800	$140	11,060	500	35,825	1,740
Santa Cruz									3,000	150
Shasta									25,825	646
Sonoma									6,190	248
Tehama									125,860	3,147
Total			15,778	790	2,800	140	106,212	3,564	4,474,003	115,080
Gill nets and trammel nets:										
Contra Costa	195,695	$5,871					280	11	1,737,786	70,069
Del Norte									105,584	5,867
Humboldt									708,064	21,999
Los Angeles									84,713	3,383
Marin	38,170	1,520							222,529	8,802
Monterey							16,121	623	921,546	21,779
Sacramento	3,860	232					15,615	625	165,414	11,386
San Diego							48,572	1,140	68,476	2,741
San Francisco	16,277	488							3,262,862	91,451
San Luis Obispo									78,230	2,765
Santa Barbara									37,208	1,842
Santa Cruz									116,787	4,704
Solano	202,443	6,074							1,292,133	49,857
Sonoma									21,375	1,283
Total	456,445	14,185					80,588	2,399	8,912,707	297,988
Bag nets and paranzella nets:										
Contra Costa							208,196	3,065	856,635	12,791
Los Angeles							69,322	2,773	301,475	12,059
Marin							278,100	4,078	1,136,400	17,051
Monterey							8,375	258	104,359	2,750
Orange									21,448	843
San Diego									7,525	301
San Francisco							470,638	6,834	1,879,781	31,928
San Luis Obispo									7,040	352
San Mateo							347,554	5,142	1,419,255	21,312
Santa Cruz									82,075	3,283
Ventura			4,700	185			2,346	77	17,769	688
Total			4,700	185			1,384,531	22,227	5,833,702	103,398
Fyke nets and minor nets:										
Contra Costa							12,683	380	24,892	746
Sacramento							159,087	3,813	197,633	5,270
Total							171,770	4,193	222,525	6,016
Lines:										
Contra Costa	39,827	1,195							39,827	1,195
Humboldt									52,761	2,133
Los Angeles			38,260	1,530			19,200	768	433,923	17,359
Monterey									797,367	18,152
Orange			10,000	400			2,000	80	42,725	1,710
San Diego			24,000	960	62,535	2,189	20,000	800	390,580	14,751
San Francisco	48,833	1,465					93,000	1,410	626,057	24,448
San Luis Obispo									195,321	7,400
Santa Barbara			14,565	742	2,593	128	3,070	175	122,006	6,081
Santa Cruz									126,756	5,144
Solano	67,480	2,024							67,480	2,024
Sonoma									4,515	180
Ventura			5,280	210					34,244	1,376
Total	156,140	4,684	92,105	3,842	65,128	2,317	138,470	3,233	2,934,162	101,953
Grand total	612,585	18,869	112,583	4,817	67,928	2,457	1,881,571	35,616	22,377,159	624,435

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh.		Bonito, salted.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
San Francisco	36,250	$483								
Gill nets and trammel nets:										
Monterey			13,235	$785						
San Diego			53,820	2,153			13,950	$548		
San Francisco	108,750	1,631								
Santa Barbara							20,032	1,000	1,685	$84
Total	108,750	1,631	67,055	2,938			33,982	1,548	1,685	84
Lines:										
Los Angeles			207,901	6,346						
Orange			2,000	80						
San Diego			175,935	7,035	42,578	$1,490	45,950	1,838	67,549	2,364
San Luis Obispo			49,800	1,750	5,500	275			1,000	35
Santa Barbara			58,000	2,900			20,160	1,000	2,016	100
Santa Cruz			4,350	212						
Ventura			8,610	372			6,318	240		
Total			506,596	18,695	48,078	1,765	72,428	3,078	70,565	2,538
Grand total	145,000	2,114	573,651	21,633	48,078	1,765	106,410	4,626	72,250	2,622

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					142,373	$2,847			12,000	$240
Los Angeles					4,326	173			45,000	1,800
Marin					40,275	1,600			16,567	662
Orange					1,815	70			3,062	122
Sacramento	11,267	$394								
San Diego					3,522	142			25,640	1,026
San Francisco					143,420	5,737			591,716	5,925
Santa Barbara					3,110	153				
Sonoma					4,900	196				
Total	11,267	394			343,741	10,918			693,985	9,775
Gill nets and trammel nets:										
Los Angeles									3,500	140
Marin									33,134	1,325
Monterey					138,172	2,763				
San Diego									9,590	383
San Francisco			32,870	$1,315	288,840	11,674			1,775,150	17,760
Santa Cruz					21,900	876				
Total			32,870	1,315	448,912	15,313			1,821,374	19,608
Bag nets and paranzella nets:										
Contra Costa					270,840	4,063			203,150	3,152
Los Angeles					73,231	2,929			19,500	780
Marin					361,120	5,417			270,840	4,063
Monterey					30,185	605	28,579	$1,144		
Orange					3,530	132			3,436	137
San Diego					1,537	61				
San Francisco			30,740	1,230	541,679	8,226			406,260	6,094
San Luis Obispo					11,216	595				
San Mateo					451,400	6,871			338,550	4,977
Santa Cruz					34,625	1,385				
Ventura					3,896	155				
Total			30,740	1,230	1,783,259	30,439	28,579	1,144	1,241,716	19,193
Fyke and minor nets:										
Contra Costa	14,188	426								
Sacramento	34,163	1,196								
Total	48,351	1,622								

shes in the sho *able showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891*—Continued.

sh.	Bonito, salte	
lue.	Lbs.	Valu
548		
000	1,685	$
548	1,685	
838	67,549	2,7
	1,000	
000	2,016	1
240		
078	70,565	2,5
626	72,250	2 6

	Herring, fresh	
e.	Lbs.	Valu
	12,000	$2
	45,000	1,8
	16,567	6
	3,062	1
	25,640	1,0
	591,716	5,9
	693,985	9,7
	3,500	1
	33,134	1,3
	9,590	3
	1,775,150	17,7
	1,821,374	19,6
	203,150	3,1
	19,500	7
	270,840	4,0
	3,436	1
	406,260	6,0
	338,550	4,9
	1,241,716	19,1

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			24,118	$840	8,645	$770				
Los Angeles					80,253	3,210				
Monterey					22,153	442	12,492	$500		
Orange					1,365	55				
San Francisco			125,890	4,254	4,000	400				
San Luis Obispo					10,130	360				
Santa Barbara					3,900	195				
Santa Cruz					14,626	585				
Total			150,008	5,094	145,072	6,017	12,492	500		
Grand total	59,618	$2,016	213,618	7,639	2,720,984	62,687	41,071	1,644	3,757,075	$48,571

Counties and apparatus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Lines:										
Humboldt			23,625	$690						
Los Angeles			7,915	317					62,007	$1,166
Marin			30,118	1,200						
Orange			1,500	60					3,561	142
Sacramento			1,076	65						
San Diego			17,518	701					8,000	320
San Francisco			189,420	5,683					860,000	17,200
Santa Barbara							779	$49		
Santa Cruz							5,130	257		
Total			271,172	8,716			5,909	306	933,568	18,828
Gill nets and trammel nets:										
Los Angeles	78,117	$3,124								
Marin			24,890	1,000						
Monterey	2,800	140			362,716	$7,255				
San Diego	3,970	159								
San Francisco					88,873	3,555				
Santa Barbara	3,225	162								
Santa Cruz	3,590	175			41,750	1,670				
Total	91,702	3,760	24,890	1,000	493,339	12,480				
Seg nets and paranzella nets:										
Los Angeles			17,776	671	22,547	902			4,000	160
Orange			1,805	60						
San Diego			6,250	250						
San Francisco					97,873	3,915				
Santa Cruz					49,830	1,990				
Ventura					6,835	270				
Total			25,891	981	177,085	7,077			4,000	160
Yoke and minor nets:										
Sacramento			3,477	209						
Lines:										
Humboldt					34,472	1,034				
Los Angeles	248,352	9,934			58,645	2,346				
Monterey	29,934	1,497			395,862	7,917	19,472	760		
Orange	3,000	120			7,000	280				
San Diego	10,990	440			62,000	2,480				
San Francisco					370,496	14,219				
San Luis Obispo	122,890	4,560			129,720	4,070	1,500	75		
Santa Barbara	2,750	135					2,338	117		
Santa Cruz	9,265	417			91,504	3,605				
Sonoma					4,264	171				
Ventura					6,425	256				
Total	427,181	17,103			1,160,388	37,278	23,310	952		
Grand total	518,883	20,863	325,430	10,906	1,830,812	56,835	29,219	1,258	937,568	18,988

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte	114,890	$3,446	182,500	$4,818	18,750	$280		
Humboldt			442,166	14,739	147,388	2,948	66,384	$2,463
Shasta	29,110	730						
Tehama	11[illegible],623	2,890						
Total	259,623	7,066	624,666	19,557	166,138	3,228	66,384	2,463
Gill nets and trammel nets:								
Contra Costa	594,[illegible]	22,[illegible]						
Del Norte	193,869	5,816						
Humboldt			448,780	14,959	149,593	2,992	49,816	1,983
Marin	15,035	600						
Sacramento	76,112	5,328						
San Francisco	448,322	17,933						
Solano	694,181	27,767						
Sonoma	36,656	2,199						
Total	2,058,172	83,403	448,780	14,959	149,593	2,992	49,816	1,983
Lines:								
Monterey	7,990	480						
Santa Cruz	15,260	690						
Total	23,250	1,170						
Grand total	2,341,045	91,639	1,073,446	34,516	315,731	6,220	116,200	4,446

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt					[illegible]0	$16	32,000	$800		
Los Angeles							68,974	2,760		
Marin							28,310	1,120		
Orange							9,470	378		
San Diego							12,000	480		
San Francisco							170,971	6,839		
Santa Barbara							3,790	188		
Total					160	16	325,515	12,565		
Gill nets and trammel nets:										
Contra Costa					108,011	4,320			23,932	$3,590
Los Angeles			4,301	$172			45,491	1,819		
Marin	15,482	$610					27,220	1,080		
Monterey							76,985	3,080		
Sacramento					17,516	1,051			157	24
San Diego	[illegible],366	135					3,735	150		
San Francisco	[illegible],419	6,710			230,460	6,914	683,884	27,355	4,320	648
San Luis Obispo	[illegible],[illegible]	3,110	17,000	850			19,930	687		
Santa Barbara	4,880	245					4,000	200		
Santa Cruz					30,120	1,205	25,661	1,226		
Solano					58,739	2,350			2,265	340
Total	333,102	10,810	21,301	1,022	444,846	15,840	886,906	35,597	30,674	4,602
Bag nets and paranzella nets:										
Contra Costa							141,420	2,167		
Los Angeles							61,500	2,460		
Marin							186,560	2,848		
Orange							8,645	346		
San Francisco							280,838	4,920		
San Mateo							234,700	3,720		
Total							913,663	16,461		
Lines:										
Los Angeles	18,206	728								
Orange	3,000	120								
San Diego	9,000	360								
Santa Barbara	4,135	206								
Ventura	4,815	190								
Total	39,156	1,604								
Grand total	372,258	12,414	21,301	1,022	445,006	15,856	2,126,084	64,623	30,674	4,602

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1891—Continued.

Counties and apparatus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Del Norte									316,140	$8,544
Humboldt									866,096	24,745
Los Angeles							20,323	$1,081	208,545	7,207
Marin									115,270	4,583
Orange									19,408	770
Sacramento							57,587	1,415	69,930	1,874
San Diego							21,587	862	88,267	3,531
San Francisco							9,280	464	2,001,057	42,326
Santa Barbara			10,805	$540	2,500	$125	12,220	600	33,204	1,655
Santa Cruz									5,130	257
Shasta									29,110	730
Sonoma									4,900	196
Tehama									115,623	2,890
Total			10,805	540	2,500	125	120,997	4,422	3,872,680	99,398
Gill nets and trammel nets:										
Contra Costa	213,625	$6,409					915	37	940,489	38,116
Del Norte									193,860	5,816
Humboldt									648,189	19,934
Los Angeles									131,409	5,255
Marin	15,946	630							131,707	5,245
Monterey							11,810	455	605,718	14,478
Sacramento	3,250	195							97,035	6,598
San Diego							21,228	845	109,653	4,374
San Francisco	18,137	545					43,970	1,062	3,943,986	97,102
San Luis Obispo									125,900	4,647
Santa Barbara									33,822	1,687
Santa Cruz									123,021	5,152
Solano	274,785	8,243							1,029,970	38,700
Sonoma									36,656	2,199
Total	525,743	16,022					77,923	2,399	8,151,415	249,303
Bag nets and paranzella nets:										
Contra Costa							197,882	2,935	813,272	12,310
Los Angeles							76,325	3,053	274,879	10,955
Marin							264,840	3,924	1,083,360	16,251
Monterey							5,110	155	63,874	1,904
Orange									17,476	673
San Diego									7,787	311
San Francisco							440,031	6,201	1,797,421	30,586
San Luis Obispo									11,216	595
San Mateo							329,120	4,745	1,353,770	20,319
Santa Cruz									84,455	3,375
Ventura			4,256	150			2,730	108	17,717	683
Total			4,256	150			1,316,038	21,121	5,525,227	97,956
Pyke and minor nets:										
Contra Costa							15,013	450	29,201	876
Sacramento							170,858	4,151	208,498	5,556
Total							185,871	4,601	237,699	6,432
Lines:										
Contra Costa	56,100	1,683							56,100	1,683
Humboldt									67,235	2,644
Los Angeles			65,190	2,608			22,302	892	700,849	26,064
Monterey									487,902	[illegible]596
Orange			5,000	200			2,000	80	23,365	935
San Diego			59,000	2,360	63,461	2,230	41,815	1,673	578,278	22,277
San Francisco	54,113	1,760					84,492	1,140	638,991	21,773
San Luis Obispo									320,540	12,040
Santa Barbara			9,210	460	2,132	106	4,864	242	109,805	5,461
Santa Cruz									135,005	5,509
Solano	91,595	2,748							91,595	2,748
Sonoma									4,264	171
Ventura			5,020	173					31,188	1,231
Total	201,808	6,191	143,420	5,801	65,593	2,336	155,473	4,027	3,244,818	114,132
Grand total	727,551	22,213	158,481	6,491	68,093	2,461	1,856,302	36,570	21,031,839	567,221

Table showing by counties and apparatus of capture the yield of food-fishes in the sho or boat fisheries of California in 1892.

Counties and apparatus of capture.	Anchovies, fresh.		Barracuda, fresh.		Barracuda, salted.		Bonito, fresh		Bonito, salte	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Valu
Seines:										
San Francisco	39,053	$390								
Gill nets and trammel nets:										
San Diego			47,100	$1,886			13,525	$540		
San Francisco	111,122	1,112								
Santa Barbara							9,200	460	440	
Total	111,122	1,112	47,100	1,886			22,725	1,000	440	
Lines:										
Los Angeles			254,433	5,345						
San Diego			152,570	6,110	41,104	$1,440	32,475	1,460	74,664	2,0
San Luis Obispo			7,500	263						
Santa Barbara			72,000	3,600			10,800	540	560	
Ventura			11,000	440			7,110	280		
Total			497,503	15,758	41,104	1,440	54,385	2,280	75,224	2,7
Grand total	150,175	1,502	544,603	17,644	41,104	1,440	77,110	3,280	75,664	2,7

Counties and apparatus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Valu
Seines:										
Humboldt					145,873	$2,917			13,000	$2
Los Angeles					2,529	101			25,000	1,0
Marin					38,000	1,520			9,946	
Orange					2,380	95			3,745	
Sacramento	9,915	$347								
San Diego					2,070	82			36,940	1,3
San Francisco					98,105	2,943			719,209	7,1
Santa Barbara					2,510	125				
Sonoma					5,187	210				
Total	9,915	347			296,654	7,993			807,840	10,4
Gill nets and trammel nets:										
Los Angeles									2,000	
Marin									25,470	1,0
Monterey					123,360	2,468				
San Diego									13,060	
San Francisco			34,000	$1,020	192,695	5,956			2,257,180	22,5
Santa Cruz					17,845	714				
Total			34,000	1,020	333,900	9,138			2,297,710	24,1
Bag nets and paranzella nets:										
Contra Costa					303,350	4,550			227,515	3,4
Los Angeles					99,804	3,993			14,000	5
Marin					404,468	6,067			303,350	4,5
Monterey					34,990	700	30,167	$1,207		
Orange					5,782	230			2,255	
San Diego					890	35				
San Francisco			36,170	1,085	606,703	9,110			455,027	6,8
San Luis Obispo					9,000	450				
San Mateo					505,585	7,585			379,190	5,0
Santa Cruz					33,520	1,341				
Ventura					3,000	120				
Total			36,170	1,085	2,007,092	34,181	30,167	1,207	1,381,337	21,1
Fyke nets and minor nets:										
Contra Costa	21,342	$640								
Sacramento	34,405	1,204								
Total	55,747	1,844								

ble showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892—Continued.

ounties and appa-atus of capture.	Carp, fresh.		Cultus-cod, fresh.		Flounders, fresh.		Flounders, salted.		Herring, fresh.	
	Lbs	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
nes:										
Humboldt			30,000	$1,050	15,000	$1,350				
Los Angeles					54,215	2,168				
Monterey					31,470	628	13,670	$547		
Orange					2,960	115				
San Francisco			130,500	3,915	5,515	551				
San Luis Obispo					2,110	75				
Santa Barbara					3,990	200				
Santa Cruz					19,950	798				
Total			160,500	4,965	135,210	5,885	13,670	547		
Grand total	65,662	$2,191	230,670	7,070	2,772,856	57,197	43,837	1,754	4,486,887	$55,796

unties and appa-atus of capture.	Mackerel, fresh.		Perch, fresh.		Rockfish, fresh.		Rockfish, salted.		Sardines, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
nes:										
Humboldt			28,500	$560						
Los Angeles			7,114	285					36,864	$654
Marin			28,525	1,141						
Orange			4,000	160					5,000	200
Sacramento			1,114	67						
San Diego			14,725	589					3,000	120
San Francisco			201,108	6,033					703,130	14,063
Santa Barbara							275	$14		
Santa Cruz							2,620	131		
Total			285,086	8,835			2,895	145	747,994	15,037
ll nets and tram-mel nets:										
Los Angeles	67,350	$2,693								
Marin			21,475	859						
Monterey	125	6			356,860	$7,137				
San Diego	1,020	41								
San Francisco					84,703	2,541				
Santa Barbara	3,080	154								
Santa Cruz	2,483	125			43,055	1,723				
Total	74,058	3,019	21,475	859	484,618	11,401				
g nets and paran-zella nets:										
Los Angeles			17,727	709	11,938	477			5,000	200
Orange			1,000	40						
San Diego			5,275	211						
San Francisco					91,103	2,733				
Santa Cruz					45,270	1,811				
Ventura					7,780	311				
Total			24,002	960	156,091	5,332			5,000	200
ke nets and minor nets:										
Sacramento			4,554	273						
nes:										
Humboldt					50,000	1,500				
Los Angeles	210,052	8,403			45,817	1,833				
Monterey	6,084	280			368,520	7,369	18,580	743		
Orange					4,320	173				
San Diego	3,750	150			50,000	2,000				
San Francisco					351,614	10,548				
San Luis Obispo	11,300	456			98,240	3,865	6,500	325		
Santa Barbara	2,420	121					275	13		
Santa Cruz	6,300	274			83,895	3,356				
Sonoma					3,700	148				
Ventura					6,220	249				
Total	239,906	9,684			1,062,326	31,041	25,355	1,081		
Grand total	313,964	12,703	335,117	10,927	1,703,035	47,774	28,250	1,226	752,994	15,237

Table showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892—Continued.

Counties and apparatus of capture.	Salmon, fresh.						Salmon, salted.	
	Chinook.		Silver.		Steelhead.		Silver.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Seines:								
Del Norte	49,563	$1,067	99,124	$1,534	49,563	$867	.....	.....
Humboldt	.....	.....	388,050	12,935	129,350	2,587	21,630	$863
Shasta	31,445	785	.....	.....	.....	.....	.....	.....
Tehama	128,389	3,210	.....	.....	.....	.....	.....	.....
Total	209,397	5,062	487,174	14,469	178,913	3,454	21,630	863
Gill nets and trammel nets:								
Contra Costa	1,037,331	41,493	.....	.....	.....	.....	.....	.....
Del Norte	84,000	2,520	.....	.....	.....	.....	.....	.....
Humboldt	.....	.....	394,588	13,163	131,529	2,630	17,370	695
Marin	12,000	480	.....	.....	.....	.....	.....	.....
Sacramento	81,112	5,678	.....	.....	.....	.....	.....	.....
San Francisco	1,122,928	44,917	.....	.....	.....	.....	.....	.....
Solano	944,507	38,220	.....	.....	.....	.....	.....	.....
Sonoma	28,839	1,730	.....	.....	.....	.....	.....	.....
Total	3,310,717	135,038	394,588	13,163	131,529	2,630	17,370	695
Lines:								
Monterey	6,915	415	.....	.....	.....	.....	.....	.....
Santa Cruz	14,175	640	.....	.....	.....	.....	.....	.....
Total	21,090	1,055	.....	.....	.....	.....	.....	.....
Grand total	3,541,204	141,155	881,762	27,632	310,442	6,084	39,000	1,559

Counties and apparatus of capture.	Sea bass, fresh.		Sea bass, salted.		Shad, fresh.		Smelt, fresh.		Striped bass, fresh.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Seines:										
Humboldt	.....	.....	.....	.....	100	$10	42,250	$1,056	.....	.....
Los Angeles	.....	.....	.....	.....	.....	.....	75,323	3,013	.....	.....
Marin	.....	.....	.....	.....	.....	.....	24,500	980	.....	.....
Orange	.....	.....	.....	.....	.....	.....	11,921	477	.....	.....
San Diego	.....	.....	.....	.....	.....	.....	13,645	546	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	112,470	4,500	.....	.....
Santa Barbara	.....	.....	.....	.....	.....	.....	4,260	213	.....	.....
Total	.....	.....	.....	.....	100	10	284,369	10,785	.....	.....
Gill nets and trammel nets:										
Contra Costa	.....	.....	.....	.....	139,364	4,181	.....	.....	38,947	$4,674
Los Angeles	2,553	$102	.....	.....	.....	.....	51,107	2,044	.....	.....
Marin	13,000	520	.....	.....	.....	.....	25,500	1,020	.....	.....
Monterey	.....	.....	.....	.....	.....	.....	74,868	2,995	.....	.....
Sacramento	.....	.....	.....	.....	21,579	1,295	.....	.....	199	30
San Diego	2,375	95	.....	.....	.....	.....	4,355	174	.....	.....
San Francisco	135,350	5,414	.....	.....	242,749	4,855	433,747	17,348	13,153	1,315
San Luis Obispo	61,650	1,808	500	$25	.....	.....	5,300	186	.....	.....
Santa Barbara	7,640	372	.....	.....	.....	.....	3,740	187	.....	.....
Santa Cruz	.....	.....	.....	.....	35,000	1,400	52,322	2,099	.....	.....
Solano	.....	.....	.....	.....	87,702	2,631	.....	.....	3,910	469
Total	222,568	8,311	500	25	526,394	14,362	650,939	26,044	56,209	6,488
Bag nets and parazella nets:										
Contra Costa	.....	.....	.....	.....	.....	.....	151,675	2,275	.....	.....
Los Angeles	.....	.....	.....	.....	.....	.....	61,000	2,440	.....	.....
Marin	.....	.....	.....	.....	.....	.....	202,065	3,035	.....	.....
Orange	.....	.....	.....	.....	.....	.....	13,700	548	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	303,351	4,550	.....	.....
San Mateo	.....	.....	.....	.....	.....	.....	252,795	3,792	.....	.....
Total	.....	.....	.....	.....	.....	.....	984,586	16,640	.....	.....
Lines:										
Los Angeles	16,659	666	.....	.....	.....	.....	.....	.....	.....	.....
San Diego	7,625	305	.....	.....	.....	.....	.....	.....	.....	.....
Santa Barbara	6,360	328	.....	.....	.....	.....	.....	.....	.....	.....
Ventura	.....	.....	4,000	160	.....	.....	.....	.....	.....	.....
Total	30,644	1,299	4,000	160	.....	.....	.....	.....	.....	.....
Grand total	253,212	9,610	4,500	185	526,494	14,372	1,919,894	53,469	56,209	6,488

...ble showing by counties and apparatus of capture the yield of food-fishes in the shore or boat fisheries of California in 1892—Continued.

...unties and appa-ratus of capture.	Sturgeon, fresh.		Yellow-tail, fresh.		Yellow-tail, salted.		Other fish, fresh and salted.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
...ines:										
Del Norte									198,250	$3,468
Humboldt									768,753	21,190
Los Angeles							14,174	$684	161,004	5,737
Marin									100,971	4,039
Orange									27,046	1,082
Sacramento							63,168	1,447	74,197	1,861
San Diego							18,150	725	88,530	3,540
San Francisco							15,550	547	1,887,625	35,668
Santa Barbara			18,620	$931	800	$10	16,000	800	42,465	2,123
Santa Cruz									2,620	131
Shasta									31,445	785
Sonoma									5,187	210
Tehama									128,389	3,210
Total			18,620	931	800	40	126,042	4,203	3,516,482	83,044
...ill nets and tram-mel nets:										
Contra Costa	274,575	$8,237					1,080	43	1,491,297	58,628
Del Norte									84,000	2,520
Humboldt									543,487	16,488
Los Angeles									123,010	4,919
Marin	20,000	800							117,445	4,698
Monterey							9,638	382	564,851	12,988
Sacramento	3,820	229							106,710	7,232
San Diego							14,850	595	96,375	3,853
San Francisco	18,840	565					39,665	1,012	4,686,132	108,627
San Luis Obispo									67,450	2,019
Santa Barbara									24,100	1,195
Santa Cruz									150,705	6,052
Solano	217,637	6,529							1,253,756	47,849
Sonoma									28,839	1,730
Total	534,872	16,360					65,235	2,032	9,338,157	278,798
...ag nets and paran-zella nets:										
Contra Costa							228,185	3,443	910,725	13,680
Los Angeles							73,845	2,954	283,314	11,333
Marin							303,519	4,650	1,213,402	18,302
Monterey							4,420	125	69,577	2,032
Orange									22,737	908
San Diego									26,165	246
San Francisco							508,657	8,123	2,001,011	32,426
San Luis Obispo									9,000	450
San Mateo							379,185	5,686	1,516,755	22,751
Santa Cruz									78,790	3,152
Ventura			3,170	127			2,000	80	15,950	638
Total			3,170	127			1,499,811	25,061	6,127,426	105,918
...yke nets and minor nets:										
Contra Costa							26,205	786	47,547	1,426
Sacramento							180,329	4,355	219,288	5,832
Total							206,534	5,141	266,835	7,258
...ines:										
Contra Costa	49,280	1,478							49,280	1,478
Humboldt									95,000	3,900
Los Angeles			59,307	2,372			23,460	938	663,943	21,725
Monterey									445,299	9,982
Orange			3,680	147					10,960	435
San Diego			50,000	2,000	80,632	2,907	125,925	5,040	622,745	24,102
San Francisco	61,320	1,840					92,715	1,343	641,664	18,197
San Luis Obispo									125,650	4,984
Santa Barbara			16,380	819	1,000	50	3,450	173	117,235	5,872
Santa Cruz									124,320	5,068
Solano	72,545	2,176							72,545	2,176
Sonoma									3,700	148
Ventura			4,830	193					33,160	1,322
Total	183,145	5,494	134,197	5,531	81,632	2,957	245,550	7,494	3,005,441	99,389
Grand total	718,017	21,854	155,987	6,589	82,432	2,997	2,143,170	43,931	22,254,341	574,407

Table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California in 1889, 1890, 1891, and 1892.

Years and counties.	Crabs.		Shrimp and prawn.		Spiny lobsters.		Abalone meat and shells.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value
1889.								
Bag nets:								
Contra Costa			919,221	$41,769				
Marin			1,225,628	55,693				
San Francisco			1,845,221	84,559				
San Mateo			1,532,034	69,616				
Total			5,522,104	251,637				
Other apparatus:								
Humboldt	86,400	$3,000						
Los Angeles					108,000	$2,815	19,810	$4
Monterey							3,850	
San Diego					48,158	1,203		
San Francisco	1,944,000	76,045					30,000	6
Santa Barbara					110,300	3,309	228,879	5,8
Total	2,030,400	79,045			266,458	7,327	282,539	7,0
1890.								
Bag nets:								
Contra Costa			967,947	43,983				
Marin			1,290,600	58,643				
San Francisco			1,941,055	88,894				
San Mateo			1,613,246	73,303				
Total			5,812,848	264,823				
Other apparatus:								
Humboldt	90,000	3,125						
Los Angeles					107,000	2,810	860	
Monterey							4,400	
San Diego					40,370	1,009		
San Francisco	2,000,000	80,000					28,000	5
Santa Barbara					130,940	3,928	114,933	3,9
Total	2,090,000	83,125			278,310	7,747	148,193	4,6
1891.								
Bag nets:								
Contra Costa			813,806	36,967				
Marin			1,085,175	49,289				
San Francisco			1,631,232	74,585				
San Mateo			1,356,345	61,610				
Total			4,886,558	222,451				
Other apparatus:								
Humboldt	98,100	3,406						
Los Angeles					102,125	2,688	5,135	
Monterey							3,700	
San Diego					25,000	625		
San Francisco	2,250,000	90,000					24,000	4
Santa Barbara					145,120	4,355	241,826	6,2
Total	2,348,100	93,406			272,245	7,668	274,661	6,8
1892.								
Bag nets:								
Contra Costa			885,010	40,195				
Marin			1,180,020	53,590				
San Francisco			1,770,025	80,389				
San Mateo			1,475,020	66,989				
Total			5,310,075	241,163				
Other apparatus:								
Humboldt	112,320	3,900						
Los Angeles					128,425	3,340	7,775	16
Monterey							4,189	8
San Diego					20,000	500		
San Francisco	2,750,000	99,000					39,000	50
Santa Barbara					154,850	4,646	238,463	5,2
Total	2,862,320	102,900			303,275	8,486	289,427	6,11

Table showing by counties the yield of crustaceans, mollusks, and reptiles, etc., in the shore or boat fisheries of California—Continued.

Years and counties.	Clams, hard.		Clams, soft.		Mussels.		Oysters.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1889.								
Humboldt	43,750	$937	10,800	$270				
Marin	32,060	690	11,100	109				
San Diego	420,000	3,000						
San Francisco	74,900	1,605	1,096,800	11,518	2,100,000	$8,750	12,369,000	$571,525
Total	570,710	6,232	1,118,700	11,897	2,100,000	8,750	12,369,000	571,525
1890.								
Humboldt	42,000	900	12,000	300				
Marin	30,450	655	10,080	101				
San Diego	350,000	2,500						
San Francisco	89,530	1,920	1,239,900	13,020	2,700,000	11,250	12,829,500	592,137
Total	511,980	5,975	1,261,980	13,421	2,700,000	11,250	12,829,500	592,137
1891.								
Humboldt	47,250	1,012	15,000	375				
Marin	28,700	615	10,380	106				
San Diego	280,000	2,000						
San Francisco	94,850	2,033	1,489,980	15,396	2,998,080	12,500	13,387,800	618,455
Total	450,800	5,660	1,515,360	15,877	2,998,080	12,500	13,387,800	618,455
1892.								
Humboldt	52,500	1,125	17,400	435				
Marin	33,110	720	11,040	110				
San Diego	252,000	1,800						
San Francisco	141,890	2,804	1,988,760	19,888	2,880,000	12,000	15,098,700	698,257
Total	479,500	6,449	2,017,200	20,433	2,880,000	12,000	15,098,700	698,257

Years and counties.	Octopus and squid.		Terrapin and frogs.		Hair-seal, sea-lion, and sea-otter pelts.		Whale and seal oil.		Algæ.	
	Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.	Lbs.	Value.
1889.										
Los Angeles					215	$580	7,200	$288		
Marin			11,250	$3,000						
Monterey	468,000	$37,440							5,800	$232
San Francisco	15,000	750	30,000	2,400						
San Luis Obispo					78	195	33,210	1,107		
Santa Barbara					181	3,423	4,200	224	14,370	575
Total	483,000	38,190	41,250	5,400	474	4,198	44,610	1,619	20,170	807
1890.										
Los Angeles					83	225	4,800	192		
Marin			12,563	3,350						
Monterey	256,000	20,480							6,500	260
San Francisco	10,000	300	35,000	4,200						
San Luis Obispo					53	143	40,440	1,343		
Santa Barbara					199	2,527	4,800	256	22,845	914
Total	266,000	20,780	47,563	7,550	335	2,895	50,040	1,791	29,345	1,174
1891.										
Marin			12,262	3,270						
Monterey	300,760	23,900							7,780	310
San Francisco	8,000	240	37,500	4,500						
San Luis Obispo					133	359	41,940	1,403		
Santa Barbara					182	3,597	4,500	240	11,361	455
Total	308,760	24,200	49,762	7,770	315	3,956	46,440	1,643	19,141	765
1892.										
Los Angeles					121	330				
Marin			13,125	3,500						
Monterey	357,622	28,610							14,835	593
San Francisco	9,000	270	32,500	4,550						
San Luis Obispo					95	256	36,015	1,200		
Santa Barbara					85	2,221	2,150	112	13,490	540
Total	366,622	28,880	45,625	8,050	301	2,807	38,165	1,312	28,325	1,133

SAN DIEGO COUNTY.

As compared with the last investigation, the fisheries of the mo
southern county in California show considerable fluctuation. Th
decrease in the general building trade had called to other sections
the State a large number of men and their families, thus reducing th
home demand for food-fish, and consequently curtailing the extent
the fisheries. Some attempts have recently been made to increase th
domestic and foreign trade in fish, but these efforts were scarcely suf
cient to retain the few fishermen employed. During 1892 a limite
quantity of fresh fish was shipped as far east as Denver, Colo., and on
carload, made up of crawfish (i. e., spiny lobsters), fresh fish, and salte
fish, was sent to Chicago and Philadelphia in a refrigerator car. It wa
probably the first attempt to dispose of the abundant crawfish of th
west coast in the markets east of the Rocky Mountains. At the tim
of this experiment the true lobsters were very scarce and of high pric
in the East, and the crawfish was regarded as a fair substitute an
met with a ready sale at good prices.

The yield of the fisheries of this county is nearly equally divide
between fish consumed in a fresh condition and those cured. Th
aggregate amount of fish proper taken in 1892 was somewhat less tha
in 1889, as may be seen from the following comparison:

Fish.	1889.	1892.
	Pounds.	*Pounds.*
Fresh	630,400	522,00
Cured	530,220	566,36
Total	1,160,620	1,088,36

Both the dry and pickle cured fish are largely exported to the Sand
wich Islands. Five-eighths of the catch is taken by means of smal
vessels ranging in size from 7 to 15 tons. These vessels in most case
frequent grounds south of San Diego. Sometimes, if fish are no
found nearer, they resort to grounds 100 miles from the home port
The crew usually consists of three men, who employ hand and trol
lines. About three-eighths of the catch is obtained by small boat
fishing nearer the shore. The shore fishermen go out in the mornin
and return the same evening, fishing along the coast some 10 to 1
miles south of San Diego, and about the same distance north fro
Point Loma, at the entrance to the harbor of San Diego.

Chinese junks were formerly much used by the Chinese fishermen o
San Diego County. In 1888 thirteen of various sizes were engaged i
fishing. Year by year the Chinese have been withdrawing from th
business, deeming it too hazardous on account of the danger fro
seizure by the Mexican Government for illegal fishing, and the possi
bility of not being permitted to reenter the United States. The junk
fishermen, sailing under no flag, have been obliged to pay alien por
charges, which materially reduced the profits of the business. In

w cases the junks have been sold to American fishermen, the numrs by which they were known to the customs officials being supanted by names. The junks used in San Diego County have declined om 13 used in 1888, 6 in 1889 and 1890, to 1 in 1893.

The shore fisheries of this county are carried on from small cat, sloop, schooner rigged boats, carrying a crew of two men, who reside in n Diego and market their catch in that city. A small camp of Porguese fishermen is found at La Playa, on the side of the bay opposite n Diego. These fishermen man their boats singly, and cure all of eir catch, most of which is pickled for the Sandwich Islands trade. f the quantity pickled, about three-fourths are albacore, one-eighth onito, and one-eighth yellow-tail. The entire catch is taken by trolling. hen fishing each boat uses four 15-fathom lines, each provided with a ngle hook. Just above the hook a decoy bait is fastened consisting f a piece of bone sometimes cut to resemble a small fish, but in most ases simply a narrow fragment without definite shape.

In the vessel fishery the same kinds of lines are employed, although ght instead of four are used by each craft. The lines are fished from e sides of the vessels, being rigged on poles in a manner similar to that nployed in the mackerel fishery of the Atlantic coast many years ago.

In hand-lining the men use what may be designated a reverse trawl, t noticed elsewhere in the United States. The line is from 100 to 150 thoms long and is provided with 25 to 50 hooks attached to gangings, hich in turn are fastened to the main line at intervals of a foot apart, eginning at the bottom. The hooks are baited with either fresh or lted fish. Such lines are used from the sides of the vessels in from to 100 fathoms of water. The fishermen seem pleased with this rig, nd comment on its superiority over other forms of lines. Having ropped the line over the side of the vessel to the bottom, they have a ring of baited hooks suspended that attracts the fish much more effectely than would be the case with a single hook or a series of hooks rranged on the ordinary trawl. As soon as the line reaches the bottom e fishermen begin to draw it in and the fish follow it toward the surface. ften as many as half the hooks are found to have fish on them.

The fishermen report no scarcity of fish on the grounds adjacent to e Bay of San Diego, but few fish are now caught inside of the bay, here fine fishing was formerly enjoyed. The city sewage and the umping of city refuse and garbage just outside of the harbor have, in e opinion of the fishermen, prevented the fish from entering the bay.

In September, 1891, an experimental shipment of 3,660 pounds of ickled fish was made to the Sandwich Islands. The fish met with uch favor that the business rapidly increased, until in 1892 the fish so hipped amounted to 34,300 pounds. The largest part of the pickled sh consists of albacore, which are taken in abundance at all seasons f the year, and range in size from 30 to 70 pounds. The principal art of the catch is taken by trolling on the grounds some 10 miles outhwest from Point Loma. The fish intended for the Sandwich

Islands trade are prepared as follows: After the removal of the he and viscera, the fish, without being split, are cut transversely int slices 1 to 1½ inches thick, which are thrown into vats of strong pickl and after being throughly cured are packed into barrels and hal barrels for shipment.

Among the invertebrate products of the fisheries of this county th crawfish, or the spiny lobster, is most important. This crustacea occurs in great abundance and is taken in pots and drop nets of variou kinds. The pots used by one firm of fishermen are unique in bein made of iron, to better withstand the heavy swell and rough sea. The general style is similar to the traps used by the lobster fishermen Massachusetts. The frame is constructed of ¾-inch gas-pipe, the bod of galvanized-iron wire, twine being used at the ends in the construc tion of the funnels. These pots are 20 inches square and 4 feet lon It is claimed that they will emer[illegible] good shape from usage that woul totally destroy the ordinary lo[illegible]ots. They were first used durin the winter of 1893.

The business of taking abalones continues of some importanc These mollusks appear to have increased to some extent during th past few years, owing to the discontinuance of the Chinese fisheri the low prices received for shells and meat affording no inducement white fishermen to undertake the business.

ORANGE COUNTY.

This is a county recently formed from parts of Los Angeles and oth adjacent counties. The principal center is Newport, which was fo merly included in Los Angeles County. The fisheries consist in th operations of a few fishermen located at Newport. The catch in 18 amounted to about 75,000 pounds, which was hauled in teams to San Ana, and sent thence by express to Los Angeles.

LOS ANGELES COUNTY.

The fisheries of this county present few changes in methods co pared with the conditions found in the previous investigation. The has, however, been quite an increase in the extent of the industry, an it is probable that the next few years will witness a still further au mentation. New and competing lines of railroad have been open up, freight rates have been reduced, and new fishing stations have bee established. The centers in this county from which commercial fishi is now prosecuted are Redondo Beach, Ballona, Santa Monica, Lo Beach, San Pedro, and Wilmington.

Redondo Beach, located 22 miles from Los Angeles, was first reach by railroad in November, 1889. Previous to the construction of th road the few fishermen at this point sent their catch by teams to L Angeles. A marked increase in the important fisheries has ensu since the establishment of rail communication with Los Angeles, t catch being 51,700 pounds in 1889, and 181,905 pounds in 1892. Fishi is here done by means of bag nets, gill nets, and hand lines, which a

perated along the beach from small boats. There being no harbor of shelter, in stormy weather the boats and fishing gear are hauled high up on the beach. Fish are generally abundant and in large variety, and the fishermen have no difficulty in speedily filling their dories.

At Ballona, located 8 miles north of Redondo Beach, four American fishermen plied their vocation in 1889, 1890, and 1891, but abandoned the business the following year. The catch averaged about 30,000 pounds annually. Two other small fishing-camps are located 2½ and 6 miles, respectively, to the south of Redondo Beach.

The fishing business of Santa Monica is limited, the annual shipments and local consumption aggregating only 75,000 to 100,000 pounds.

From Long Beach 30,000 to 35,000 pounds of fresh fish are annually sent by express to Los Angeles by fishermen living at San Pedro and Wilmington, but taking their fish off Long Beach. San Pedro, with its safe harbor and good rail and steamboat facilities, as well as its nearness to the fishing-grounds, continues to be the chief fishing center in Los Angeles County. The fisheries have shown a steady increase, largely on account of reduced rates for railroad transportation.

Large shipments of fresh, pickled, and dry fish are sent from this point to San Francisco, Los Angeles, and other points. The total quantities of fishery products sent from this place during the four years ending 1892 were as follows:

Years.	Pounds.	Value.
89	480,370	$17,938
90	547,550	20,702
91	505,385	19,276
92	650,253	24,444

Wilmington, by virtue of its shipping advantages, is the second point of fishing importance in Los Angeles County. The quantities of fresh and salt products distributed from this point during the years named were as follows:

Years.	By express.	By freight.	By team.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
89	131,383	34,645	102,125	268,153
90	129,100	18,548	110,415	258,063
91	182,879	352,263	35,260	570,402
92	69,451	223,045	20,350	312,846

The shipments by express and team consisted of fresh fish sent to Los Angeles. The shipments by freight were salt fish, abalones, and sea-lion pelts. In March, 1891, a firm located at this place began the extensive curing of fish. The business consisted chiefly in pickling mackerel and barracuda and in packing sardines in kegs and small packages. In March, 1892, the curing establishment was burned and not rebuilt, this fact accounting for the diminution in the catch of this county in 1892 as compared with 1891.

The quantities of cured fish shipped from Wilmington in the yea 1889 to 1892, inclusive, were as follows:

Species.	1889.	1890.	1891.	1892.
	Pounds.	*Pounds.*	*Pounds.*	*Pound*
Mackerel	9,023	9,059	175,229	109.
Sardines	2,256	2,265	43,807	27
Barracuda	6,766	6,794	131,421	82
Total	18,045	18,118	350,458	218.

Additional shipments of prepared products were as follows:

Products.	1889.	1890.	1891.	1892.
Abalone meat ..... pounds	3,170	430	435	.....
Abalone shells ..... do	12,400	.....	1,375	.....
Sea-lion pelts ..... do	11,000	.....	.....	4.
Sea-lion oil ..... gallons	960	640	.....	.....

Los Angeles, the principal community in the county, has no fisherie but is the chief distributing-point for fishery products caught in th waters of the county and consumed in many of the interior towns southern California. Nearly all the fresh fish shipped from the differe fishing stations of the county is sent by rail or team to the wholesa and retail dealers of Los Angeles. A somewhat unusual feature of t business is the contracting by the dealers for all the fish caught t the fishermen at a uniform price per pound, usually 4 cents, regardle of the different species. Dealers in Los Angeles are experimenting the smoking, pickling, and canning of several of the desirable foo fishes found on the coast of the county. The barracuda have be smoked and pronounced by experts equal to finnan haddies, of whic considerable quantities were previously imported from the East. T bull's-eye mackerel has been pickled to some extent; this is a ver good food-fish in a fresh condition, but owing to the deficiency of f in its flesh it does not make a satisfactory pickled fish.

Some sardines of excellent quality have been packed in oil, mustar and other ways common to the trade. In the vicinity of San Ped and Santa Catalina Island, sardines are, in their season, found in larg quantities. During February, March, and April of each year sma sardines are usually abundant and in fine condition for canning. May and June the larger sardines arrive and appear to crowd out t fish of smaller size. In July and August the large fish withdraw a the small fish again become plentiful. Up to August the fish are ge erally in fine condition, but after that date at times the small fish a usually of poor quality for canning. The larger sardines found in th part of the State are somewhat smaller in size than those occurring San Francisco Bay, being of the size most suitable for packing half-pound cans in mustard and spices. There appears to be a brig future for the sardine industry in this county, and the expansion of t business may be confidently expected during the next few years.

VENTURA COUNTY.

Less than half a dozen fishermen, with headquarters at Ventura, represent the fishing industry of this county. Fish are abundant, and the fishing business could no doubt be largely increased with profit to the producer and benefit to the people of the interior, but at the present time the entire catch is used locally. A branch of the Southern Pacific Railroad connects Ventura with Los Angeles. Within comparatively few years this section of the State has rapidly developed and the valleys have been settled by farmers and fruit-growers.

SANTA BARBARA COUNTY.

The fisheries of this county are prosecuted from Santa Barbara and the adjacent islands, and present few new features as compared with 1888. The branches of the fishing industry here followed are the taking of the shore food-fishes, the hunting of sea otters and sea lions, and the utilization of abalones and algæ.

Fish are abundant at all seasons and the weather is mild and favorable for fishing throughout the year. The extent of the fisheries is, however, quite limited and does not to any extent represent the resources of the county. The few fishermen here, mainly Austrians and Chinese, make a good living with little exertion, carrying on their business only when the weather is perfect and they are so disposed. Most of the catch is consumed locally, the demand being considerable during the winter months, when thousands of visitors and tourists are found in this section. In summer but small quantities of fish are taken.

Three camps of fishermen and sea-lion hunters are located on the islands of Santa Cruz and Santa Rosa, the fishermen being Americans and Chinese. The former give attention to sea lions and sea otters, while the Chinese take most of the algæ and abalones, and prepare the dry fish which are exported.

Sea lions are taken at San Miguel and Flea Islands and on Richardson's Rock. They are hunted for their oil, which brings about 40 cents per gallon, and their hides, which are worth about 4 cents per pound. The skins are tanned and make serviceable leather. Many of the sea lions are of large size. Of late years there has been quite a demand for live specimens to be placed in public parks and gardens in some of the eastern cities, and a considerable number have also been shipped alive to Europe. In 1891, 34 sea lions, weighing 9,580 pounds, were shipped east from this county, and in the following year 17, weighing 5,170 pounds, were so disposed of. The sea lions sought for their oil and hides are killed by means of guns, while those captured alive are taken by throwing a lasso over their heads.

Six American fishermen in three boats hunt the sea otters around the islands of San Miguel, Santa Rosa, and San Nicholas. The number killed is quite small and the animals are growing scarcer each year. Thirty were taken in 1889, 20 in 1890, 12 in 1891, and 8 in 1892, the pelts having an average value to the hunters of $150.

Of late years abalones have been more abundant. The low price of shells which had for some time prevailed offered small inducement for even the frugal Chinese to take these mollusks, which consequently had an opportunity to increase. The Chinese gather from the rocks large quantities of algæ, which they dry, pack in bales, and export to China, where it is used in making soups. During 1892 13,490 pounds of dried algæ were shipped from Santa Barbara.

SAN LUIS OBISPO COUNTY.

Compared with the extent of the fisheries shown in the previous report the fishing industry of this county has undergone a slight increase, as gauged by the quantity and value of the products taken. Port Harford, with the steamboat and railroad connections, is the most important of the several fishing stations of the county, the others being located at Morro and Cazucos, 15 and 21 miles, respectively, north of Port Harford, and at San Simeon, a shore whaling station some 20 miles farther north.

The catch of food-fish in 1892 was unusually light, owing to scarcity of mackerel and barracuda; the catch of the former at Port Harford was 105,000 pounds in 1891 and only 7,300 pounds in 1892, the catch of barracuda falling off from 50,000 pounds to 750 pounds.

In close proximity to Port Harford are Pecho Rock and Lion Rock, which are favorite resorts for a large number of sea lions, which are hunted for their pelts and oil. The extent of this branch of the fisheries in the years 1890, 1891, and 1892 was as follows:

Years.	Sea lions killed.	Pelts.		Oil.	
		Pounds.	Value.	Gallons.	Value.
1890	53	3,577	$143	292	
1891	133	8,978	359	732	
1892	95	6,412	256	522	

The shore whale fishery, which was at one time carried on with considerable activity from a number of stations along the California coast, is now restricted to the limited operations of a few fishermen at San Simeon, at the northern end of this county. The results of the business during the past four years were as follows:

Years.	Whales killed.	Oil made.	
		Gallons.	Value.
1889	5	4,000	$1,6
1890	7	5,000	2,0
1891	7	5,000	2,0
1892	5	4,000	1,6

MONTEREY COUNTY.

The fisheries of this county have a peculiar interest in that Monterey Bay, the principal fishing-ground, represents the limit of migration of many fishes; shad and salmon, for instance, are here found in some numbers, but do not occur south of Monterey Bay, while a large variet

of fish annually migrate northward as far as this section which are seldom found in any abundance in higher latitudes. Among the latter are the mackerel, bonito, albacore, and barracuda. The fishermen of this county usually find a great abundance of fish and have the choice of a larger number of species than is found elsewhere on the west coast. The other economic water products of this county consist chiefly of squid and algæ. With few exceptions the fishermen are Portuguese or Chinese, the latter comprising two-thirds of the fishing population. Most of the Portuguese are naturalized citizens.

Nearly all of the catch of both whites and Chinese is sent by steamer or rail to San Francisco. The squid and dry fish shipped by the Chinese are in large part reshipped to the Sandwich Islands or China. The quantities of fresh fish sent to market by the white and Chinese fishermen of this county were somewhat less in 1892 than during the three previous years, as shown in the following table. The species shipped are specified in the detailed tables elsewhere presented.

Statement of fresh fish shipped to San Francisco by fishermen of Monterey County.

Fishermen.	1889.	1890.	1891.	1892.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
White	979,507	1,130,962	825,338	672,129
Chinese	345,849	369,250	157,015	199,380
Total	1,325,356	1,500,212	982,353	871,509

The following shipments were also made by the Chinese fishermen, consisting of dry fish, squid, and abalones and abalone shells, and algæ:

Products.	1889.	1890.	1891.	1892.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
Dry fish	102,000	61,000	61,240	63,380
Dry squid	468,000	258,000	300,760	357,622
Dry abalones	1,150	1,300	900	1,235
Abalone shells	2,700	3,100	2,800	2,954
Algæ	5,800	6,500	6,500	14,835
Total	579,650	330,900	372,200	440,476

SANTA CRUZ COUNTY.

The fisheries of Santa Cruz County present no new features as compared with the conditions recorded in the last report. The quantity of fish taken shows a small increase each year, but the industry may be regarded as only imperfectly developed. Shad are found along the coast of this county, but do not appear to be undergoing the marked increase in numbers which is witnessed in the more northern counties of the State. In 1889 20,000 pounds were taken, and in 1892 the catch was 35,000 pounds. Salmon are also caught in limited quantities each year. The few fresh-water streams entering the ocean on this part of the coast probably accounts for the small increase in shad and

salmon. The bulk of the catch consists of flounders, rockfish, smelt and sturgeon, and nearly the entire yield is sent fresh to San Francisco. The shipments of fresh fish during each of the four years ending 189 were as follows:

Years.	Pounds.	Value.
1889	249,960	$9,98
1890	310,776	12,43
1891	330,694	13,22
1892	354,213	14,16

SAN FRANCISCO COUNTY AND VICINITY.

By far the most extensive fisheries of California are located at San Francisco, which has the distinction of being the most important fishing center on the Pacific Coast of North America. Besides maintaining valuable fisheries, the city is the principal market for the product of nearly every county in the State and is in very close relation with the adjacent counties of Contra Costa, Solano, Sonoma, and Marin.

The branches which give prominence to this region are the general market fisheries of San Francisco Bay and tributaries and of the adjacent ocean, the cod fishery, the whale fishery, the fur-seal and sea-otter fishery, the oyster industry, and the Chinese fisheries. These have been so fully described in the previous report that it is only necessary at this time to record their extent and the few changes which have ensued.

PHYSICAL FEATURES OF SAN FRANCISCO BAY AND TRIBUTARIES.

A large part of the salt-water and fresh-water fish received in San Francisco is taken in San Francisco Bay and its tributary bays and streams. This inland water area is of large extent and well adapted to the support of a large amount and variety of animal life. The quantity of fishery products annually withdrawn from these waters is enormous, but it is doubtful if the full resources are utilized or appreciated.

In a general way the dimensions of San Francisco Bay and the smaller bays connected therewith may be stated as follows: From the southern end of San Francisco Bay, bordering on Santa Clara County, to San Francisco is a distance of 25 miles, the width of the bay being from 2 to 10 miles. Between San Francisco and the entrance of San Pablo Bay the distance is 11 miles; San Pablo Bay is 10 miles long and from 8 to 10 miles wide. Karquines Strait, which connects San Pablo Bay with Suisun Bay, is 8 miles long and ½ to 1 mile wide. Suisun Bay is 16 miles long and from ½ to 6 miles wide. The total length of these connected waters is about 70 miles.

At the northern end of Suisun Bay, in Solano County, the two largest rivers in the State have their outlets. A peculiar feature of these rivers, probably not found elsewhere in the United States, is the relation existing between their respective sources and outlets. The San

oaquin takes it rise in the semitropical section of the southern part f the State, and flows northward hundreds of miles through a warm egion. The Sacramento, with its head waters among the perpetually now-covered Sierra Nevada Mountains, flows south many hundred iles, and, through numerous passages, mingles with the San Joaquin nd is lost in the tide waters of the bay. These two streams constantly arry with them a large amount of minute animal and vegetable life, uch of which must find a congenial home in San Francisco Bay and urnish a large and varied quantity of food for the fish life of the fresh, rackish, and salt waters.

Another interesting feature of the bay is the almost uniform temperture of the water, there being only a few degrees variation at any eason of the year. That the conditions are extremely favorable to he support of aquatic life is demonstrated in the rapid increase and ermanent residence of the several fine food-fishes introduced from the tlantic Coast by the Government. Some of the fishes thus acclimaized are naturally anadromous, but in San Francisco Bay, contrary o their usually migratory habits, they do not appear to have any esire to spend much if any of their existence in the ocean.

Another feature which has its influence upon the quantity of animal ife present in San Francisco Bay is the absence of fishing banks or ubmerged chains of mountains off the coast of California adjacent to he Golden Gate. Fishing-grounds such as are found off the coast f the Atlantic States do not occur within many hundred miles of the alifornia coast. It may therefore be assumed that during very stormy eather numbers of the near-shore marine fishes would seek food and helter inside the Golden Gate, where, finding favorable conditions, any remain.

THE MARKET FISHERIES.

The fresh-fish business of San Francisco presents few changes or mprovements. Fish are handled in the same primitive manner often escribed and always noticed by everyone that takes any interest in isiting the fish markets. The fish are seldom dressed and but a small mount of ice is used. Several of the dealers united as one company uring 1892 and have made quite an improvement in having larger and ore inviting quarters in which to transact their business. Six days n the week, every week in the year, with the exception of a few stormy ays, the little lateen-rigged fishing boats sail out in the morning for he same fishing-grounds, with the same kind of fishing gear, nets, or rawls; with little trouble they catch the same varieties of fish, and the vening finds them back in their fishing dock.

The use of steamers, recommended in a previous report, in place of ail vessels is slowly taking place. The first steamer to engage in the arket fisheries began work in or about 1885. This vessel was a tug hat combined towing part of the time with fishing, when not otherise engaged. During 1891 several of the wholesale firms united and dded two steamers to the business, and in 1892 one more was added,

making four steam vessels then in the market fishery. Some of these steamers are continually engaged in the fishing business, and at most times all four of them are. They leave the fishing dock early every morning, except Saturday, which is their day of rest, made so from the next day being Sunday, in which they could not dispose of their catch as they return in the evening of the same day they leave. The steamers leave the fishing dock and soon pass out through the Golden Gate; turning north, a run of a few hours brings them to their usual fishing grounds in Drake Bay, where the paranzella or drag net is soon in the water, and the steamer slowly drags it along the bottom until it is thought best to reel it in, empty the catch, and repeat the operation.

The steamer's crew consists of captain, engineer, fireman, and four to six fishermen, who are hired by the month.

The catch consists mostly of flounders and the numerous varieties of flatfish, with a small amount of many other kinds of bottom fish, some of which are saved and others thrown overboard quite likely to be recaught the following day, as nearly the same fishing-ground is gone over day after day, and generally the catch is equally good.

One good result of the use of steamers is that the catch can always be landed fresh and only a few hours at most from the time the fish were freely swimming in the ocean.

The many varieties of salt-water fish caught by the market fishermen outside of the Golden Gate have as a general thing been of an average abundance and ample for the needs of the market. Of the anadromous fishes, shad and striped bass have wonderfully increased in the market. The price of the latter has fallen from 75 cents or $1 a pound, which was freely paid in 1889, to 10 to 15 cents a pound in 1892. Shad, which a few years after their introduction brought $5 each, have year by year largely increased in numbers, and the price has fallen in the market as low as 25 cents for two fish, or about 3 cents a pound, the fishermen often receiving as little as a cent a pound. Salmon have in few instances been very plentiful, but the season's catches on the whole have not been satisfactory. The tables by counties will show the catch of these and all other species for the past four years.

A conspicuous part of the fresh-fish supply of San Francisco is taken in San Francisco Bay and the adjoining bays to the north. Between San Francisco and the southern end of the bay the principal fisheries carried on are for oysters, shrimp, herring, and smelt. At the extreme end, and for a few miles above on each side, are the only cultivated oyster beds in the State. These embrace several hundred acres. At many places in San Francisco Bay may be found the remains of native oyster beds in the shape of very small shells. Where native oysters are found alive their size is too small to render them of any commercial value. Investigations made by the United States Fish Commission disclosed the existence of a number of these native oyster beds that were not previously known, most of which were south of San Francisco, although a few were in the vicinity of San Pablo Bay. On some

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f these old beds were found numbers of medium-sized eastern oysters n good condition. These were probably the outcome of spat that had rifted with the tide from the cultivated beds of eastern oysters.

Next in importance to the oyster industry is the shrimp fishery arried on by the Chinese. At several points on the west side of the outhern part of the bay are located extensive camps of the Chinese shermen, while in close proximity to their camps along the borders f the bay and as far out as the main channel may be seen hundreds f their shrimp nets fastened to stakes.

From the middle of January to the middle of June smelt are more or ess abundant and taken with nets along the west shore and along the order of the channel. From November to February herring and smelt re netted on the east side of the bay. From San Francisco to a dis- ance 5 miles south smelt are caught during July and August, and a hort distance south on the east side of the bay smelt and herring are ound in December and January.

The foregoing comprise all of the principal fishing done within that art of the bay south of San Francisco. Just inside the Golden Gate rimitive traps to the number of several hundred are fished for crabs. The first of the winter catch of herring is taken in Richardson Bay orth of the Golden Gate, in which is located one of the large stations or the receiving and curing of cod. Another important station con- ected with the cod fishery is found a few miles distant on the main ay, these comprising all the firms that are engaged in the cod fishery f California. From the harbor of San Francisco to the upper extrem- ty of Suisun Bay salmon, shad, and striped bass are netted from April o the middle of September, the principal part of the run of fish being aken in or near the channel. On each side of the entrance to San Pablo Bay the Chinese fishermen, whose operations were fully noticed n the previous report, continue to have their camps and follow their mportant fisheries for shrimp and the smaller species of bottom fish. On the west side of San Pablo Bay sturgeon and flounders are taken etween February and May.

The fisheries of Suisun Bay are limited to the taking of salmon, had, and striped bass.

THE PACIFIC COD FISHERY.

This branch of the Pacific fisheries is making history, although in many respects differing from the much older one of the Atlantic. Since the landing of the first cargo in 1864, up to 1893, the few firms engaged in the catching and curing of codfish have seen many fluctua- tions and changes in the business. The increase which the industry has undergone has only been reached by seeking the widely separated and distant markets of the Atlantic Coast, the Sandwich Islands, and Australia. Changes have taken place in the mode of preparing the fish for market. A small amount is yet called for in the old style, hard dried with skin on and tied up in bundles of 75 to 100 pounds; but

most of the fish after curing are stripped of their skins, cut up, and packed as boneless fish. This modern way of placing cod on the market has been most favorably received in Australia, where the American boneless cod has nearly driven the hard-cured "stock fish" of northern Europe from the market.

Changes are taking place in the grounds resorted to by fishermen. The distant Okhotsk Sea and far eastern waters, where attention was first called to the cod of the Pacific, have nearly been abandoned by American fishermen for the nearer home fishing-grounds of Bering Sea, and the vessel fisheries of the latter are giving way to the establishment of permanent fishing stations on the islands bordering Bering Sea. Both American and native fishermen remain at these stations and fish on the adjacent banks, which are quickly and easily reached by small boats. The fares are soon taken, and on returning to the station the fish are dressed, salted, and packed away until vessels from San Francisco arrive. These bring salt for curing and supplies for the men, and return with loads of kench-cured fish to be unloaded at the home station, and there prepared as boneless cod.

Firms at San Francisco engaged in the cod fishery have branch stations at the following points on the Shumagin Islands: Sand Point, Red Cove, Company Harbor, Squaw Harbor, Ikaluk, Chichagof Bay, Henderson Island, Unga Island, Nelson Island, Pirate Cove, Sanborn, Rasatska, Johnson's Harbor, and Port Stanley.

The San Francisco cod fleet in Okhotsk Sea in 1889 and 1890 consisted of two brigs of 618 tons, whose aggregate catch was 1,168,484 pounds and 1,123,941 pounds, respectively. During 1891 no American cod vessels visited that region. In 1892 a three-masted schooner of 369 tons took 516,000 pounds of cod.

The extent of the Bering Sea cod fishery carried on by San Francisco vessels during the four years beginning 1889 was as follows, two small schooners being employed in transporting the catch:

Years.	No. of vessels.		Tonnage.	Catch.	
	Brigs.	Schooners.		Pounds.	Value.
1889	1	2	208	294,940	$7,3[illegible]
1890	2	2	376	655,138	16,3[illegible]
1891	4	3	1,120	2,114,711	52,8[illegible]
1892	4	2	994	1,742,155	43,5[illegible]

The aggregate receipts of salt cod by San Francisco firms, specified by fishing-grounds, are shown for four years in the following table:

Grounds.	1889.	1890.	1891.	1892.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
Okhotsk Sea	1,168,484	1,123,941	.....	516,[illegible]
Bering Sea	294,940	655,138	2,114,711	1,742,1[illegible]
Islands of Alaska	1,134,775	1,659,602	1,637,000	2,208,6[illegible]
Total	2,598,199	3,438,681	3,751,711	4,466,1[illegible]

Vessels going to Okhotsk Sea on cod-fishing trips usually leave San Francisco about May 1 and return home by the latter part of September. The start for Bering Sea is made early in April and the home port is reached toward the end of August. There is considerable difference in the size and value of the codfish found in different parts of Bering Sea. As time passes and more knowledge of the extensive fishing banks is gained, fish of larger size, with thicker flesh and of better quality, are taken. A decided improvement in the quality of the catch is noticed compared with a few years back.

On entering Bering Sea vessels first anchor and begin fishing on Lime Bank, at the entrance to Bristol Bay. Cod are not always plentiful in this locality and, if scarce, a move is made to grounds off Port Möller, which is the region resorted to during June and July. It is fished over for some 10 miles northwest and southeast of Port Möller. Occasionally two trips are made, or a vessel will start later than the date mentioned; if so, the catch during August and September is obtained farther north, off Cape Pierce and Hagemeister Island.

THE PELAGIC FUR-SEAL AND SEA-OTTER FISHERY.

The high price commanded by seal pelts in recent years and the almost fabulous sums received for the sea-otter skins, incidentally obtained in the same fishery, have resulted in a marked increase in this branch of the San Francisco fisheries. The size of the fleet increased from six vessels in 1889 to eighteen in 1892, with a corresponding advance in the yield of fur seals, although the number of otters killed was in almost inverse ratio to the size of the fleet.

In addition to the home fleet, vessels from Oregon and Washington come to San Francisco for outfits and crews. Early in January the vessels are busy making ready, and by the middle of February all have sailed. On leaving San Francisco on a sealing trip vessels usually go but a short distance, some 50 miles west or southwest, before the hunting begins. Sometimes the day after leaving port seals are fallen in with, quite a catch is made, and the vessels will be back in port, having been away less than forty-eight hours. The first to sail in 1892 left December 28, and returned January 20, 1893, with 207 skins. Again, not meeting with the moving herds, a vessel will cruise along the southern coast or to the southwest for a few hundred miles, and then, heading to the north, will work up the coast. The business is at the best quite uncertain. Some vessels at the close of the season have a fine balance, others little, if anything, and may show quite a loss.

The sealing crews as a rule ship on a lay or share, which varies somewhat with the different vessels. The captain usually has a private agreement at so much a month, with or without a share or percentage. The first mate receives one-fifteenth of the stock or $65 a month, or $10 a month and 40 cents for each seal taken by the boat he is in. The second mate, if by the month, gets $30 to $45. The cook and steward, combined in one, is paid $45 to $50 a month. The cabin boy receives

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$15 to $20 a month. The seamen, if on a lay, are entitled to one hundredth of the stock, but most of them receive 50 cents for each seal taken by the boat in which they are. Hunters, so known, are the men who shoot the seals; they usually receive $2 for each seal and $6 to $ for each otter that they may kill and secure. The owners of the vessels furnish all food, guns, ammunition, and other needed supplies, and in case seals are not found they are the ones to suffer the loss, the crew being out their time only.

The extent of this fishery from 1889 to 1892, inclusive, is shown in condensed form in the following table:

The pelagic fur-seal and sea-otter fleet of San Francisco.

Years.	Vessels.		Seal skins taken.		Sea-otter skins taken.	
	No.	Tonnage.	No.	Value.	No.	Value.
1889	6	377.99	1,691	$15,219	277	$27,70
1890	9	633.37	5,818	69,816	273	27,30
1891	16	1,153.58	8,948	134,220	151	30,20
1892	18	1,308.36	14,710	167,526	227	34,05

The average number of seals and sea otters taken by each vessel varied greatly during the four years named, and shows the uncertainty attending the prosecution of this fishery. Some vessels returned home without having taken a single pelt, while others obtained as many as 2,600 skins. The following brief statement of averages, based on the foregoing table, shows some interesting points:

Years.	Seal skins.		Sea-otter skins.	
	Average number to a vessel.	Average stock to a vessel.	Average number to a vessel.	Average stock to a vessel.
1889	282	$2,536	46	$4,61
1890	646	7,757	30	3,03
1891	559	8,389	10	1,88
1892	817	10,470	12	1,90

THE WHALE FISHERY.

Probably no other business on the Pacific Coast with anything like the capital invested is followed with the uncertainty of the Arctic whale fishery. One year may witness a remunerative fishery, to be followed the next season with heavy loss of life, money, and property. The fishery continues to center at San Francisco, which, in addition to having a large local fleet, is the permanent headquarters of numbers of vessels belonging in New Bedford, Mass.

With the low prices received for oil, the whale fishery would soon come to an end were it not for the more valuable whalebone. Often during recent years only the bone has been saved if other whales are in sight, the remainder of the carcass being cast adrift. The market price of whalebone has ruled high, with wide fluctuations from time to

ne. During 1891 the price varied from $4 to $5 a pound for Arctic one; in April, 1891, it had advanced to $6.50, and in October had opped to $5, closing in December at $5.75. The opening price in 92 was $5.62, with sales up to $6; as the season wore on it declined $5, and later in the year to $4. During the early fall, news of the ccess or failure of the Arctic fishery is anxiously looked for, and the arket is governed by the same. The prices given are eastern quotaons, and do not make much difference to the seamen engaged in the king of the whales; although they ship on a lay, or share, the price whalebone and oil is usually agreed on in advance.

The extent of the whaling business carried on by vessels owned at an Francisco is shown in condensed form in the following table:

Summary of the San Francisco whale fleet and its operations, 1890 to 1892.

Years.	Number of fishermen.	Vessels.				Advances to crews.
		Number.	Net tonnage.	Value.	Value of outfit.	
890	1,090	32	8,174.61	$572,000	$276,297	$112,135
891	1,059	31	7,026.10	570,000	263,756	108,628
892	1,240	36	8,983.16	648,500	302,060	126,026

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
890	168,303	$710,239	6,121	$3,979	286,901	$120,498	$834,716
891	218,781	1,177,042	3,472	2,396	226,866	106,627	1,286,065
892	192,950	1,032,282	12,804	8,579	192,895	81,016	1,121,877

There is no fishery in the United States in which a more heterogeneous personnel is found than in the Pacific whale fishery. Nearly every State and every nation is represented, as will appear from the following tables based on the official shipping lists:

Table showing the nativity and nationality of the persons employed on the San Francisco whaling fleet in 1892.

Countries.	Nativity.	Nationality.	Countries.	Nativity.	Nationality.
United States	498	639	New Zealand	3	.....
Austria	6	1	Nova Scotia	11	.....
Australia	11	.....	Norway	50	38
Belgium	5	5	Portugal	110	79
China	3	3	Russia	19	16
Canada	13	.....	South America	14	8
Denmark	27	21	Spain	58	55
East Indies	2	.....	Scotland	35	.....
England *	115	181	Sandwich Islands	31	28
France	22	18	Switzerland	6	4
Germany	108	76	Sweden	69	49
Holland	11	5	St. Helena	6	.....
Italy	1	.....	United States of Colombia	2	2
Ireland	32	.....	West Indies	18	.....
Japan	8	8			
Mexico	4	4	Total	1,240	1,240
New Brunswick	2	.....			

* The nationality of the fishermen of the various British provinces is shown in the aggregate under the general head of England.

Of the native-born citizens on the whaling vessels, the following States were represented to the extent shown:

States and Territories.	1892.	States and Territories.	18
Alabama	1	Minnesota	
California	77	Missouri	
Colorado	3	Montana	
Connecticut	7	Nebraska	
Delaware	2	Nevada	
District of Columbia	5	North Carolina	
Dakota	1	New York	
Florida	3	New Jersey	
Georgia	1	Ohio	
Illinois	15	Oregon	
Indiana	2	Pennsylvania	
Iowa	6	Rhode Island	
Kansas	2	Vermont	
Maine	28	Virginia	
Maryland	9	Wisconsin	
Massachusetts	122		
Mississippi	1	Total	4
Michigan	6		

The names, rigs, and tonnage of the vessels constituting the fle were as shown in the following table:

Name.	Rig.	Net tonnage.	Years engaged		18
			1890.	1891.	
Alton	Sch	84.30	×	×	
Alexander	Brig	128.88	×	×	
Bounding Billow	Bark	228.83	×	×	
Beluga	Str	409.48	×	×	
Balæna	Str	389.67	×	×	
Bonanza	Sch	128.70	×	×	
Blakely	Sch	133.64			×
Eliza	Bark	281.71	× *b*		
E. F. Harriman	Bark	366.10	×	×	×
Grampus	Str	250.26	×	×	
Helen Mar	Bark	308.13	×	×	
Hunter	Bark	337.38	×	×	
Hidalgo	Bark	165.96	×	×	
Jane Gray	Sch	107.07	×	×	
John & Winthrop	Bark	321.38	×	×	
John P. West	Bark	335.64	×	×	
James Allen	Bark	330.98	×	×	
J. H. Freeman	Str	359.80	×	×	
Karluk	Str	220.93			
Lyon	Bark	312.28	×	×	
Mars	Bark	243.44	×	×	
Mary H. Thomas	Sch	93.08	×	×	
Mary D. Hume	Str	108.01	×	×	
Nicotine	Sch	65.50	×	×	
Narwhal	Str	389.67	×	×	
Northern Light	Bark	365.42	×	×	
Orca	Str	462.39	×	×	
Rosario	Sch	141.25	×	×	
Percy Edward	Brig	180.18			
Stamboul	Bark	247.42	×	×	
Sea Breeze	Bark	307.24	×	×	
Silver Wave	Sch	26.90	× *d*	×	
Thrasher	Str	343.01	×	×	
Tamerlane	Bark	353.87			
W. H. Myer	Brig	256.50	×	×	
Wanderer	Bark	288.13	×	×	

a Lost; crew saved.
b Lost on St. Lawrence Island; crew saved.
c Lost in Arctic ice; of the crew of 40 only 2 were saved.
d Tender to the fleet.
e Lost by going ashore at Sandwich Islands; of the crew lost.

The whaling business carried on by New Bedford vessels making their headquarters at San Francisco is about half as extensive as that of the home fleet. The following condensed figures, applying to the years 1890, 1891, and 1892, show the prominent features of the fishery

ls, the followi

ritories.	18

Summary of the New Bedford whale fleet and its operations, 1890 to 1892.

Years.	Number of fishermen.	Vessels.				Advances to crews.
		Number.	Net tonnage.	Value.	Value of outfit.	
1890	652	17	5,081.98	$197,900	$188,900	$61,500
1891	630	16	4,787.95	203,500	182,100	62,800
1892	645	17	4,880.33	217,500	194,000	63,400

Years.	Whalebone.		Sperm oil.		Whale oil.		Total value of catch.
	Pounds.	Value.	Gallons.	Value.	Gallons.	Value.	
1890	114,350	$400,225	11,535	$7,497	172,187	$72,318	$480,040
1891	91,700	412,650	9,700	6,693	139,137	65,395	484,738
1892	122,500	551,250	55,293	37,044	161,384	67,778	656,072

The nationality and nativity of the persons constituting the crews of the New Bedford whaling fleet operating in the North Pacific Ocean are exhibited in the following table:

Table showing the nativity and nationality of the persons employed on the New Bedford whaling fleet in 1892.

Countries.	Nativity.	Nationality.	Countries.	Nativity.	Nationality.
United States	220	292	Mexico	7	7
Austria	1	1	Norway	14	14
Australia	7	.....	Nova Scotia	3	.....
Africa	2	.....	New Brunswick	3	.....
Brazil	2	2	Portugal	93	93
Belgium	1	1	Peru	4	3
Canada	6	.....	Poland	1	.....
Chile	8	8	Russia	5	6
Denmark	3	2	Spain	73	69
England*	32	73	Sweden	9	6
East Indies	7	.....	Scotland	11	.....
France	3	13	Sandwich Islands	29	29
Fiji Islands	1	.....	St. Helena	6	.....
Germany	50	21	Switzerland	3	3
Holland	6	6	United States of Colombia	2	2
Italy	1	1	West Indies	15	.....
Ireland	14	.....			
Japan	3	3	Total	645	645

* The nationality of the fishermen of the various British provinces is shown in the aggregate under the general head of England

The States and Territories in which the native-born citizens belong are given in the following statement:

States and Territories.	1892.	States and Territories.	1892.
Alaska	2	New Hampshire	1
California	18	Nevada	1
Connecticut	3	North Carolina	1
District of Columbia	1	New Jersey	6
Florida	1	New Mexico	1
Illinois	8	Ohio	4
Indiana	2	Oregon	3
Iowa	2	Pennsylvania	20
Kansas	4	Rhode Island	7
Kentucky	2	Vermont	2
Maine	4	Virginia	3
Maryland	5	Wisconsin	2
Massachusetts	79	Washington	2
Michigan	2		
Missouri	4	Total	220
New York	30		

The names, rig, and tonnage of the New Bedford whaling fleet a shown for the years 1890, 1891, and 1892 in the following table:

Name.	Rig.	Net tonnage.	Years engage 1890.	1891.	18
Alaska	Bark	323.00	×	×	
Andrew Hicks	Bark	287.96	×	×	
Alice Knowles	Bark	287.64	×	×	
Andrew Barker	Bark	361.14	×	×	
Belvedere	Str	339.37	×	×	
Chas. W. Morgan	Bark	298.06	×	×	
California	Bark	348.25			
Cape Horn Pigeon	Bark	201.42	×	×	
Frances A. Barstow	Brig	121.19	×	×	
Horatio	Bark	321.58			
Josephine	Bark	384.54		×	
Lagoda	Bark	352.29	×*a*		
Mermaid	Bark	259.65			
Navarro	Str	171.39			
Ocean	Bark	274.32	×*b*		
Reindeer	Bark	319.62	×	×	
Sea Ranger	Bark	259.46	×	×	
Tamerlane	Bark	353.87	×	×	
Triton	Bark	251.60	×	×	
William Baylis	Bark	308.83	×	×	
William Lewis	Str	332.04	×	×*a*	

a Lost. *b* Condemned.

Data are at hand for a very interesting presentation of the numbe of each kind of whale taken during the years 1890, 1891, and 1892 b the vessels belonging in San Francisco and New Bedford, respectivel The variations in the comparative abundance of the different whale as shown by the numbers killed, are suggestive and instructive:

Number and kind of whales taken in 1890, 1891, and 1892 by the American whaling fle making headquarters at San Francisco.

Kinds of whales.	Vessels belonging at San Francisco.			Vessels belonging at New Bedford.			Total.		
	1890.	1891.	1892.	1890.	1891.	1892.	1890.	1891.	189
Right	42	59	14	19	33	16	61	93	
Bowhead	69	106	107	46	30	52	115	136	1
Sperm	4	3	3	2	14	20	6	17	
Humpback	1						1		
Total	116	168	124	67	77	88	183	146	2

THE OYSTER INDUSTRY.

The oyster industry centering at San Francisco is one of the mos important branches of the fishing industry of California. San Fran cisco firms, with extensive beds of native and eastern oysters in San Francisco Bay, are the only planters of oysters in California. Each fall and spring seed oysters in car-load lots are brought from the Atlantic Coast and planted in the bay. Some years as many as 100 car loads, averaging 90 barrels of seed oysters each, are transplanted. A limited amount of the small-sized native oysters are also brought from beds in Washington. The latter are planted solely to keep them fresh and near at hand when desired. If it were not for the constant plant ing of seed oysters the beds would soon be exhausted, the natura propagation not keeping up with the demand.

Seed oysters brought from the Atlantic remain on the beds from three to four years, during which time they grow to the average size of the oyster of like age on the Atlantic. The original flavor is retained, although planted on the same beds with the natives of Washington, which are widely known for their small size and peculiar strong copper flavor, which they retain when brought and planted in California.

Ten small sailing vessels are engaged in transporting the oysters, as needed, from the beds to San Francisco. On arriving at the city, the bulk of the oysters grown from Atlantic seed are opened, canned, and packed in ice, and are known to the trade as eastern oysters. They are distributed all over the west coast, meeting those from the Atlantic at Denver, Colo.

In addition to the opening and canning of eastern oysters, considerable business is done in supplying the large city demand for oysters in the shell. Both the eastern and native oysters show an improvement during the past few years; they have larger shell, plumper meat, and better flavor. The only noteworthy feature since the more detailed report of 1889 is a slow but steady growth in the business.

There is room for an increase in the business, but to accomplish this the industry, as at present carried on, will require large capital, and several years would elapse before the seed would grow and returns be expected. The freight on the seed from the Atlantic is a large item in the expense of the business. Firms now engaged are reported as holding several thousand acres of ground adaptable for oyster-culture, but not so used.

The extent of the oyster industry of San Francisco during the years 1889 to 1892, inclusive, is shown in the following tables. The persons employed at the beds (105 in number) and on shore and the capital devoted to the business were the same each year.

Property and capital.

Items.	Value.
Vessels	$15,100
Shore property	100,000
Oyster beds	100,000
Cash capital	75,000
Total	290,100

Products.

Years.	Eastern oysters.		Native oysters.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
1889	120,000	$480,000	26,150	$91,525	146,150	$571,525
1890	125,000	500,000	26,325	92,137	151,325	592,137
1891	130,000	520,000	28,130	98,455	158,130	618,455
1892	146,000	584,000	32,645	114,257	178,645	698,257

SARDINE CANNING.

This branch of the fishing industry is yet in its infancy on the Pacific Coast. The Golden Gate Packing Company, of San Francisco, established in 1890, had up to 1892 the only sardine cannery on the coast. Sardines and anchovies are utilized. Those of small size were packed in oil in the usual quarter-pound cans; the larger fish were put up in round cans holding 1 and 2 pounds. The goods were of fine quality and met with a ready sale, but the quantity prepared was small. A number of causes, chief of which was the failure of sardines to enter San Francisco Bay in sufficient quantities, limited the pack and caused a suspension of the business in 1893, when the cannery was sold and removed to Los Angeles County, where sardines were reported to be in greater abundance. Of late years sardines have been very erratic in their appearance in San Francisco Bay. One year the fish for weeks at a time would be extremely plentiful, while during the next season they would scarcely be found at all. The quantities of fish packed during the three years 1890, 1891, and 1892 were as follows, 100 of the quarter-pound cans, 48 of the 1-pound cans, and 24 of the 2-pound cans being contained in each case:

Grades.	1890.	1891.	1892.
	Cases.	*Cases.*	*Cases.*
Quarter oils	3,000	7,000	10,000
One pound	5,000	2,000	.....
Two-pound	5,000	2,000	.....
Total	13,000	11,000	10,000

THE FISH TRADE OF SAN FRANCISCO.

The fresh-fish markets of San Francisco are interesting and in some respects unique. In them one may buy a single pound of fish or a cart-load, both wholesale and retail business being carried on at the same stand. About 12,000,000 pounds of fresh fish are handled annually, exclusive of those in the Chinese markets. Large quantities of oysters, clams, mussels, shrimp, and crabs are also sold.

The fish are received daily from the adjacent fishing-grounds visited by the home fishermen, and from the interior waters and coast towns by rail and steamship lines. The fresh and salt waters of the State are rich in quantity and variety of animal life, and fishery products from all over the State find their way to this market. It is said that over 275 species of fish are found in the waters of the State, although many of these are not used as food, except by the frugal Chinese, who rarely permit anything to go to waste.

The following table represents approximately the quantity and value of all of the important fish and other water products entering into the fresh-fish trade of San Francisco. Most of the products named may be found in the market at all seasons, selling at prices that are within the reach of all classes. Attention may be specially drawn to the figures for shad, striped bass, catfish, and carp, fishes which have been introduced from the east.

Table showing the extent of the fresh-fish trade of San Francisco in 1890, 1891, and 1892.

Species.	1890.		1891.		1892.	
	Quantity.	Retail value.	Quantity.	Retail value.	Quantity.	Retail value.
Fish:						
Anchovies.....pounds..	135,000	$5,400	145,000	$4,350	150,215	$3,755
Barracuda.....do....	120,000	10,800	150,000	12,000	75,000	6,750
Bonito.....do....	95,000	5,700	110,000	6,600	95,000	10,450
Carp.....do....	75,000	3,000	90,000	2,700	75,000	1,875
Catfish.....do....	10,000	900	20,000	1,400	25,000	1,500
Cultus-cod.....do....	150,000	10,500	190,000	11,400	200,000	10,000
Flatfish and flounders, pounds.....	1,415,959	113,176	1,341,038	80,462	1,657,208	66,288
Herring.....pounds..	2,000,000	60,000	2,400,000	48,000	3,000,000	30,000
Hake.....do....	100,000	1,000	90,000	900	85,000	850
Horse-mackerel...do....	75,000	6,000	40,000	3,600	15,000	1,200
Kingfish.....do....	40,000	2,400	25,000	2,450	40,000	2,000
Mackerel.....do....	20,000	2,600	15,000	2,100	10,000	1,500
Pike.....do....	25,000	1,500	22,000	1,320	20,000	1,200
Perch, fresh-water..do....	150,000	15,000	100,000	7,000	40,000	3,200
Perch, salt-water..do....	250,000	20,000	200,000	10,000	200,000	8,000
Rockfish.....do....	1,797,482	143,798	1,024,619	71,723	1,421,489	71,074
Salmon.....do....	2,125,000	136,500	2,065,000	129,750	2,919,848	143,061
Sardines.....do....	500,000	10,000	200,000	6,000	103,130	4,125
Sea bass.....do....	275,000	19,250	325,000	16,250	100,000	7,000
Striped bass.....do....	5,000	1,000	25,000	3,750	50,000	6,250
Shad.....do....	300,000	12,000	600,000	18,000	560,000	12,500
Skates.....do....	50,000	2,500	30,000	1,200	40,000	800
Smelt.....do....	900,000	63,000	1,000,000	70,000	700,000	42,000
Sturgeon.....do....	587,625	29,381	715,795	35,789	765,297	34,438
Suckers.....do....	175,000	5,250	160,000	4,800	140,000	4,200
Tomcod.....do....	8,000	800	15,000	1,200	25,000	1,500
Trout.....do....	25,000	5,000	20,000	4,000	18,000	3,600
Miscellaneous.....do....	31,160	6,230	35,100	5,905	52,930	9,102
Total.....	11,440,221	692,685	11,153,552	562,649	12,523,117	488,218
Mollusks, crustaceans, etc.:						
Oysters.....bushels..	151,325	592,137	158,130	618,455	178,645	698,287
Clams, hard.....sacks..	1,000	3,000	1,100	3,300	1,200	3,600
Clams, soft.....boxes..	25,000	25,000	30,000	30,000	40,000	40,000
Mussels.....buckets..	45,000	22,500	50,000	25,000	48,000	24,000
Spiny lobsters..pounds..	25,000	1,500	20,000	1,200	18,000	1,080
Crabs.....dozens..	80,000	80,000	90,000	90,000	110,000	99,000
Shrimps.....pounds..	200,000	12,000	500,000	25,000	775,000	38,750
Prawns.....do....	15,000	3,750	10,000	2,500	5,000	1,250
Squid and octopus do....	10,000	500	8,000	400	10,000	500
Terrapin.....dozen..	1,400	5,600	1,500	6,000	1,400	7,000
Abalones.....do....	1,400	1,050	1,200	900	1,500	1,125
Turtles.....pounds..	30,000	1,500	25,000	1,250	18,000	900
Frogs.....dozen..	6,000	21,000	6,000	21,000	8,000	28,000
Total.....	.....	769,537	.....	825,005	.....	943,492
Grand total.....	.....	1,462,222	.....	1,387,654	.....	1,431,710

EXPORT TRADE OF SAN FRANCISCO.

San Francisco maintains a large export trade in fishery product Canned salmon constitutes the great bulk of the shipments, but cure codfish, salt salmon, oysters, shrimp, and other products are of consi erable importance. The following table, based on the custom-hou records, shows in detail the extent of the exportations in the yea 1890, 1891, and 1892. The items for which it is possible to prese separate figures are cured codfish, other cured fish, canned salmo pickled salmon, other canned fish, oysters, and other shellfish. T "other cured fish" consist chiefly of dried squid, shipped by the Chine to Hongkong and the Sandwich Islands. The "other shellfish" a chiefly dried shrimp, with a few dried abalone, shipped by the Chine to Hongkong, the Sandwich Islands, and other ports.

Table showing exports of fishery products from San Francisco in 1890, 1891, and 189

Destination.	Codfish, cured.		Other cured fish.	
	Pounds.	Value.	Pounds.	Value
1890.				
Australia	473,270	$32,635		
British Columbia	17,060	1,260	2,100	8
China	13,940	973		
Costa Rica	16,010	1,226		
East India	1,900	119		
Guatemala	15,640	1,112		
Hongkong	45,700	3,080	304,850	18
Japan	3,490	229		
Mexico	8,665	576		
Nicaragua	880	56		
San Salvador	5,660	388		
Sandwich Islands	278,608	16,557	404,650	24
Other places	11,490	809		
Total	892,313	59,020	711,600	42
1891.				
Australia	248,320	15,155		
British Columbia	7,800	570		
China	12,750	872		
United States of Colombia	900	63		
Chile	800	61		
Costa Rica	28,580	2,160		
East India	4,500	294		
Guatemala	20,960	1,546		
Hongkong	35,410	2,201	429,900	28
Japan	7,420	515		
Mexico	6,840	457		
Nicaragua	950	65		
Oceanica	4,020	243		
San Salvador	5,620	395		
Sandwich Islands	267,220	13,767	324,900	18
Other places	4,640	306		
Total	656,730	38,670	754,800	45
1892.				
Australia	90,720	5,136	40,300	2
British Columbia	9,170	641		
China	17,580	1,148		
Costa Rica	21,810	1,409		
Guatemala	24,600	1,631		
Hongkong	19,640	1,077	294,100	17
Japan	1,810	98		
Mexico	7,185	435		
Nicaragua	1,160	73		
Oceanica	9,080	539		
San Salvador	9,050	576		
Sandwich Islands	270,590	13,042	291,500	16
Other places	900	68		
Total	483,295	25,873	625,900	36

Exports of fishery products from San Francisco in 1890, 1891, and 1892—Continued.

Destination.	Canned salmon.		Value of pickled salmon.	Value of canned fish other than salmon.	Value of oysters.	Value of other shellfish.	Total value.
	Pounds.	Value.					
1890.							
Australia	2,099,338	$217,951	$20,167	$4,222	$55	$1,677	$276,707
British Columbia	6,840	720	722	748	10,023	1,468	15,065
China	5,010	552	.....	119	.....	75	1,719
U. S. of Colombia	.....	.....	.....	14	.....	268	282
Chile	60,096	5,238	.....	46	.....	7,359	12,643
Costa Rica	29,490	3,187	.....	427	788	74	5,702
England	13,409,486	1,211,458	.....	.....	.....	.....	1,211,458
East India	39,220	4,143	20	.....	.....	174	4,456
Ecuador	119,400	2,944	.....	.....	.....	.....	2,944
France	144,070	16,008	.....	.....	.....	.....	16,008
Germany	9,600	1,100	.....	.....	.....	.....	1,100
Guatemala	4,880	541	.....	684	327	84	2,748
Hongkong	204,040	21,419	.....	567	191	213,885	257,533
Japan	12,680	1,356	195	546	56	117	2,499
Mexico	24,030	2,586	66	978	1,447	512	6,165
Nicaragua	3,055	364	.....	190	370	38	1,018
Peru	1,440	150	.....	.....	.....	.....	150
San Salvador	1,500	164	.....	149	149	60	910
Sandwich Islands	229,250	24,682	37,359	7,669	10,583	32,622	153,690
Other places	93,765	9,346	2,322	1,497	445	496	14,915
Total	16,497,190	1,523,909	60,851	17,856	24,434	258,909	1,987,712
1891.							
Australia	1,368,650	131,868	40,323	1,533	282	2,233	191,394
British Columbia	7,200	750	.....	1,354	8,651	2,024	13,349
China	6,520	672	.....	133	.....	261	1,938
U. S. of Colombia	1,850	194	.....	184	482	639	1,562
Chile	19,460	2,025	.....	175	.....	8,149	10,410
Costa Rica	82,906	8,520	.....	138	364	.....	11,182
England	13,601,195	1,221,142	.....	75	.....	.....	1,221,217
East India	12,840	1,295	.....	88	.....	515	2,192
Guatemala	5,046	537	.....	361	897	501	3,842
Hongkong	89,100	8,747	37	669	24	192,173	230,596
Japan	7,680	804	.....	193	.....	1,725	3,237
Mexico	32,286	3,433	.....	1,062	1,302	426	6,080
Nicaragua	4,260	522	.....	166	188	106	774
Peru	37,918	3,989	739	502	69	66	5,608
San Salvador	2,864	306	.....	90	466	302	1,529
Sandwich Islands	194,820	20,353	37,051	8,443	9,630	32,279	141,069
Other places	35,420	5,723	1,995	894	345	248	7,511
Total	15,508,115	1,408,613	80,745	16,024	22,700	241,647	1,854,090
1892.							
Australia	1,597,240	160,773	11,470	275	15	829	180,914
British Columbia	4,580	478	.....	527	1,63[illegible]	1,919	5,199
China	6,956	735	.....	95	15	298	2,291
U. S. of Colombia	.....	.....	.....	.....	.....	280	280
Chile	61,100	5,947	.....	.....	.....	4,605	10,552
Costa Rica	4,760	489	.....	.....	18	.....	1,916
England	17,377,838	1,701,715	.....	.....	.....	.....	1,701,715
East India	18,790	1,943	.....	32	90	541	2,606
Ecuador	2,400	250	.....	225	.....	.....	475
Germany	2,400	225	.....	.....	.....	.....	225
Guatemala	13,700	1,409	.....	933	244	56	4,273
Hongkong	65,790	6,674	.....	509	31	195,504	221,265
Japan	4,510	470	.....	241	.....	.....	809
Mexico	23,886	2,489	.....	1,511	1,600	172	6,207
Nicaragua	700	74	.....	37	.....	157	341
Peru	62,465	6,297	1,654	341	128	201	9,160
Peru	12,000	1,000	.....	.....	.....	.....	1,000
San Salvador	9,840	1,079	.....	285	529	154	2,623
Sandwich Islands	154,160	15,856	33,670	5,191	5,109	19,257	109,085
Other places	27,220	2,634	182	48	.....	40	2,972
Total	19,450,335	1,910,537	46,976	10,250	9,413	224,013	2,263,908

TEHAMA COUNTY.

This county is near the head waters of the Sacramento River, which flows through it. Late in the fall some attention is given to taking salmon; gill nets and haul seines are used, and the catch is shipped fresh to San Francisco. The fish taken are usually of a poor quality

and bring but a small price. They are probably the fish that, havi escaped the many nets of the lower river, finally reached the spawnin grounds and later fell into the nets of the fishermen of the upper riv The amount and value of the catch of late years have been as follow

Years.	Pounds.	Valu
1889	118,145	$2
1890	125,860	3
1891	115,623	2
1892	128,389	3

HUMBOLDT COUNTY.

Of the four years covered by this report the fisheries of Humbol Coun y were most important in 1889, in the matter of products a capital invested, owing to the fact that in that year a salmon canne was operated which was idle during the three following years. Th is one of the most important fishing counties in California. Over 3 fishermen are regularly employed during the fishing season and t value of the catch is from $45,000 to $80,000 annually. The mo prominent product is the salmon. The catch of salt-water fish and clams and crabs is also important. The principal fishing center Eureka, situated near Eel River, in which most of the salmon are take The salt-water fish are obtained at the mouth of the river, off Trinida located a few miles to the north, and in Humboldt Bay. The loc demand for fish in Eureka and vicinity takes a large part of the catc the surplus fish being sent to San Francisco by steamer. The yield salmon during the four years named was over 1,000,000 pounds ann ally, and that of other fish aggregated several hundred thousa pounds. About 1,000 bushels of clams and 2,400 to 3,000 dozen crabs were taken and sold each year. The number of cases of cann salmon prepared at the cannery during 1889 was 11,652.

DEL NORTE COUNTY.

Up to the present time the fisheries of this county have been limit to the taking of salmon at and near the mouths of Smith and Klama rivers. A small salmon cannery on each river consumes the bulk the catch, a part of which is also used for local consumption, and part salted and shipped to San Francisco.

Nearly all the persons employed in the fishing industry of these t rivers are Indians, native to the section, there being a strong objecti to the employment of Chinese laborers in this county.

The following is a statement of the quantities of salmon packed i this county in the years 1889 to 1892, inclusive. The fish utilized canning consist of chinooks and silversides in about equal proportion

Year.	Klamath River.	Smith River.	Tot
	Cases.	*Cases.*	*Cas*
1889	2,669	3,000	5
1890	5,000	2,500	7
1891	4,500		4
1892	1,200	3,050	4

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Pounds.	Valu-
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125,860	3
115,623	2
128,589	3

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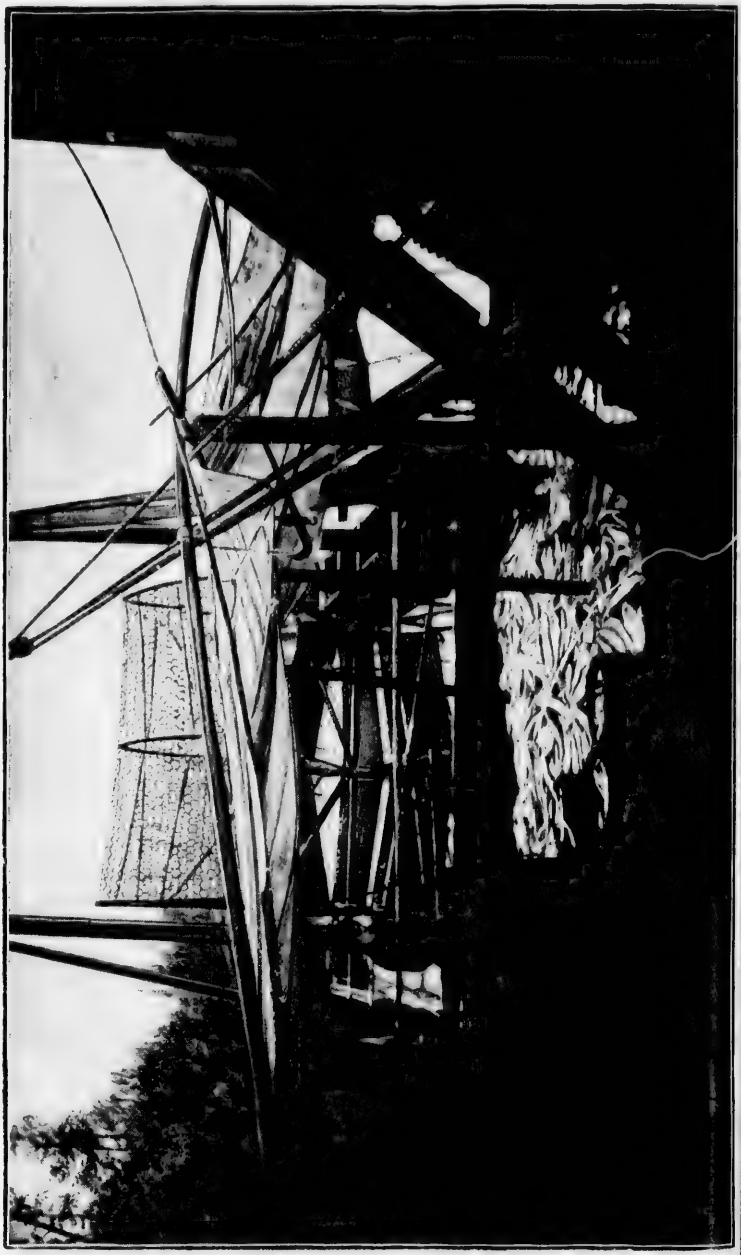
Smith River.	Tota
Cases.	*Cas*
3,000	5
2,500	7
	4
3,050	4



OREGON.

GENERAL EXTENT AND FEATURES OF THE FISHERIES.

From the first settlement of the State the fisheries of Oregon have early been of increasing interest. The abundance of salmon first attracted the fishermen, and their capture has continued the leading branch of the business. While natural causes, often unaccountable, largely govern the migrations of fish and are chiefly responsible for the uncertain character of their movements and the fluctuations in the catch, there is no room for doubt that the preservation of the supply in the rivers is largely dependent on man. During recent years a large increase is annually shown in the various appliances of capture in the salmon fisheries of the Columbia River, which yields the bulk of the salmon caught in the State. From an increase in fishing appliances a gain in the catch might be expected, but such is generally not the case. In the years of largest production a much less amount of fishing gear was used than at present. As the fish were depleted, the fishermen, eager to keep up the amount of their catch, increased the number of their gill nets, pound nets, wheels, etc., often only to find a yet smaller catch, which would again be followed by more fishing appliances.

Artificial propagation, which has been carried on so far as means would permit, has in a measure made good the losses from increased fishing gear. The naturally favorable conditions of the Columbia and most of the other rivers of the State for abundance of desirable food-fish continue nearly, if not quite, as favorable as in the early days of the fisheries, when the only fish caught were those taken by the native Indians for their own use. The waters remain unpolluted by the sewage of large cities and the refuse of manufactories, and from the topography of the country through which the rivers flow they may be expected to remain unimpaired for many years.

The salmon fishery and the dependent canning business are vastly more important than all other branches of the fisheries of this State, the only other fishery of any prominence being that for sturgeon. Only very limited quantities of other food-fish are taken, and the general fisheries are much less developed than in California or Washington. Oysters and fur seals contribute to the income of the fishermen.

The following tables show the extent of the fisheries of this State. In the last year covered by the statistics, 4,332 persons were engaged in the industry, $2,272,351 was invested, and 28,521,105 pounds of products were taken, having a value of $872,405.

Persons employed in the fisheries of Oregon.

How engaged.	1889.	1890.	1891.	1892.
On vessels fishing	11	25	55	60
On vessels transporting	40	40	38	57
On shore fisheries	2,234	2,112	2,452	2,705
On shore, in canneries, etc	1,334	1,282	1,342	1,510
Total	3,619	3,459	3,887	4,332

Vessels, boats, apparatus, shore property, and cash capital used in fisheries of Oreg

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels fishing	1	$18,000	1	$10,000	3	$15,000	4	$17
Tonnage	71.17		148.97		231.90		247.63	
Outfit		4,600		3,150		7,450		8
Vessels transporting	10	42,900	10	42,900	10	53,740	20	73
Tonnage	443.94		443.94		458.31		555.20	
Outfit		9,530		9,530		9,010		11
Boats	1,164	125,885	1,113	125,040	1,252	142,585	1,494	154
Apparatus:								
Gill nets	1,404	181,955	1,234	178,320	1,302	201,625	1,396	212
Pound nets	101	74,700	108	76,500	142	100,500	247	173
Seines	23	7,425	18	4,825	32	14,350	32	12
Wheels	31	120,052	29	107,552	30	108,152	40	132
Dip nets	95	475	85	425	60	300	50	
Lines		4,487		6,530		7,446		10
Tongs and hoes		145		150		153		
Other apparatus				850		2,050		2
Shore property		648,245		596,445		582,950		660
Cash capital		620,900		707,000		640,000		803
Total		1,859,299		1,869,217		1,885,311		2,272

Products of the fisheries of Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	25,000	$1,250			1,000	$8		
Blueback salmon	1,147,090	34,961	3,543,943	$97,961	871,392	24,127	3,140,397	$83
Chinook salmon, fresh	12,478,087	536,120	16,596,301	535,484	17,168,968	643,710	15,577,282	579
Chinook salmon, salted	70,900	2,186	87,100	2,338	97,450	2,860	54,700	1
Cultus-cod	101,112	3,555	27,120	1,356	28,415	1,389	26,304	1
Flounders							10,000	
Halibut	487,250	11,125	16,450	1,645	43,830	2,993	18,870	1
Rockfish	84,010	4,200	82,260	4,113	83,220	4,161	86,115	
Shad	29,990	2,999	50,100	4,008	70,500	4,230	109,000	
Silver salmon, fresh	4,125,540	91,563	2,168,399	33,573	1,175,620	18,640	3,925,451	61
Silver salmon, salted	359,100	11,048	313,100	5,524	299,550	5,638	252,100	1
Steelhead salmon	844,080	18,837	1,802,989	29,573	1,122,340	16,956	2,586,771	45
Sturgeon	741,730	8,821	1,441,446	16,279	1,456,619	17,311	2,513,490	29
Crabs	6,628	265	4,200	168	3,521	141	4,125	
Crawfish	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3
Oysters	150,000	3,125	132,360	2,758	146,040	3,043	147,600	3
Clams	48,720	812	46,500	775	45,600	760	49,500	
Fur seals				15,000		26,480		44
Sea otter								1
Total	20,719,237	733,867	26,337,268	754,305	22,644,165	777,247	28,521,105	872

In the following supplementary table the quantities of certain products are designated by the unit by which they are usually sold:

Products.	1889.	1890.	1891.	1892.
Crabs, number	2,209	1,400	1,173	1
Oysters, bushels	1,066	1,470	1,022	1
Clams, do	696	664	651	2
Fur seals, number		1,250	1,730	2
Sea otters, do				

BEAM-TRAWL FISHING.

Several attempts have been made on the Atlantic coast to introduce the beam trawl, a form of apparatus that is so largely and successfully used by the fishermen of England; but on account of the rough, rocky bottom on which most of the trials were made, the results have been unfavorable and its further use has been discontinued. An account

of a similar experiment on the Pacific coast has been furnished by Captain Exon, now a pilot on the Columbia River, whose father was lost while engaged in beam-trawling. During 1884 Capt. John Exon, of East Portland, Oreg., was in the employ of a fishing firm known as the Portland Deep-Sea Fishing Company, with headquarters at Portland. Captain Exon at the time was master of the schooner *Carrie B. Lake*, of about 36 tons burden, engaged in line fishing just outside the mouth of the Columbia River. The numerous varieties of bottom fish were very abundant, and the ground fished over had an even and smooth sandy bottom. Captain Exon had formerly been engaged in the beam-trawl fishery from Grimsby, England, and sent there for two beam-trawls, which were brought out by his brother in 1884 and at once put to use. The trawls were operated near the mouth of the Columbia and off Grays Harbor with equally good success, the catch comprising large hauls of sole, flounders, orange and red rockfish, and many other varieties of bottom fish. This fishery was successfully carried on during 1885. Unfortunately for the enterprising promoter of this fishery and his well laid plans, on January 3, 1886, while on a fishing trip, the vessel and its master, mate, and cook were lost. The firm soon after gave up the fishing business, and no later attempts at beam-trawl fishing on the Pacific coast have been reported. With the growth of the fish business of the Pacific States, some enterprising firms may yet take advantage of the experiments of the pioneer in this mode of fishing, the success of which he demonstrated. The United States Fish Commission steamer *Albatross* has also made frequent use of the beam-trawl in extensive investigations along the Pacific coast.

DETAILED STATISTICAL DATA.

The following tables, relating to each of the years 1889 to 1892, inclusive, show the extent of the fishing industry in each county of Oregon. The scope of the tables is such that but little explanation is necessary, and they are to be consulted in conjunction with the descriptive notes on each county which follow.

Table showing by counties the number of persons employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Benton			112	34	146			48		48
Clackamas			38		38			38		38
Clatsop		13	1,361	688	2,062		13	1,472	768	2,253
Columbia			35	4	39			40	4	44
Coos			131	85	216			68	6	74
Curry		27	74	105	206		27	70	78	175
Douglas			78	49	127			4		4
Lane			52	50	102			48	32	80
Multnomah	11		183	169	363	25		159	207	391
Tillamook			50	56	106			50	59	109
Wasco			120	94	214			115	128	243
Total	11	40	2,234	1,334	3,619	25	40	2,112	1,282	3,459

Table showing by counties the number of persons employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties.	1891.					1889.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Benton			85	22	107			83	22	1
Clackamas			40		40			40		
Clatsop	32	11	1,764	841	2,648	35	21	1 821	792	2,6
Columbia			43	6	49			40	12	
Coos			88	37	125			143	35	1
Curry		27	83	72	182		27	76	63	1
Douglas			4		4			56	51	1
Lane			42	36	78			103	91	
Multnomah	23		133	176	332	25	9	157	252	4
Tillamook			50	45	95			62	63	1
Wasco			120	107	227			124	129	
Total	55	38	2,452	1,342	3,887		57	2 705	1,510	4

Table showing by counties the nativity of persons employed in the fisheries of Oregon in 1892.

Counties.	Countries.																
	United States.	Sweden.	Norway.	Russia.	Great Britain.	Italy.	Austria.	Greece.	Germany.	France.	China.	Denmark.	United States Indians.	Japan.	Portugal.	Others.	Total.
On vessels fishing:																	
Clatsop	11	6	6	....	8											4	
Multnomah	12	2	1	....	9									1	....		
Total	23	8	7	....	17									1	....	4	
On vessels transporting:																	
Clatsop	21	....															
Curry	27	....															
Multnomah	9	....															
Total	57	....															
In shore or boat fisheries:																	
Benton	50	12	10	2													
Clackamas	40	....															
Clatsop	207	330	189	684	86	68	184	48	15			6			4		1,2
Columbia	40	....															
Coos	53	30	25	30						4					1		
Curry	55	1			2				4				14				
Douglas	32	5	1	1	3	1	1		1				5		6		
Lane	32	20	20	15									16				
Multnomah	70	34	16	33					4								
Tillamook	36	7					19										
Wasco	30	6							3			3	82				
Total	654	445	261	765	91	69	204	48	27	4		9	117		11		2,7
On shore, in canneries, etc.:																	
Benton	4	....									18						
Clatsop	143	20	7	20	6				2		502	2					5
Columbia	12	....															
Coos	10	....									25						
Curry	27	....									36						
Douglas	9	....									42						
Lane	24	....									53		14				
Multnomah	46	6	2	6	4						188						2
Tillamook	6	....									57						
Wasco	17	....									95		17				1
Total	298	26	9	26	10	....	....		2		1,106	2	31		....		1

Table showing by counties the nationality of persons employed in the fisheries of Oregon in 1892.

Counties.	Countries.																	
	United States.	Sweden.	Norway.	Russia.	Great Britian.	Italy.	Austria.	Greece.	Germany.	France.	China.	Denmark.	United States Indians.	Japan.	Portugal.	Others.	Total.
On vessels fishing:																	
Clatsop	22	2	4	....	3	....	....	....	....	....	....	....	....	....	....	4	35
Multnomah	17	1	1	....	5	....	....	....	....	....	....	....	....	1	....	....	25
Total	39	3	5	....	8	....	....	....	....	....	....	....	....	1	....	4	60
On vessels transporting:																	
Clatsop	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21
Curry	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	27
Multnomah	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9
Total	57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	57
In shore or boat fisheries:																	
Benton	75	4	4	....	....	....	....	....	....	....	....	....	....	....	....	....	83
Clackamas	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40
Clatsop	1,621	28	23	99	11	4	35	....	....	....	....	....	....	....	....	....	1,821
Columbia	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	40
Coos	108	9	11	11	....	....	....	....	....	3	....	....	....	....	1	....	143
Curry	62	....	....	....	....	....	....	....	....	....	....	....	14	....	....	....	76
Douglas	51	....	....	....	....	....	....	....	....	....	....	....	5	....	....	....	56
Lane	75	5	4	3	....	....	....	....	....	....	....	....	16	....	....	....	103
Multnomah	157	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	157
Tillamook	62	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	62
Wasco	37	2	....	....	....	....	....	....	1	....	....	2	82	....	....	....	124
Total	2,328	18	42	113	11	4	35	....	1	3	....	2	117	....	1	....	2,705
On shore, in canneries, etc.:																	
Benton	4	....	....	....	....	....	....	....	....	....	18	....	....	....	....	....	22
Clatsop	178	8	2	10	....	....	....	....	....	....	592	2	....	....	....	....	792
Columbia	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12
Coos	10	....	....	....	....	....	....	....	....	....	25	....	....	....	....	....	35
Curry	27	....	....	....	....	....	....	....	....	....	36	....	....	....	....	....	63
Douglas	9	....	....	....	....	....	....	....	....	....	42	....	....	....	....	....	51
Lane	24	....	....	....	....	....	....	....	....	....	53	....	14	....	....	....	91
Multnomah	59	2	....	3	....	....	....	....	....	....	188	....	....	....	....	....	252
Tillamook	6	....	....	....	....	....	....	....	....	....	57	....	....	....	....	....	63
Wasco	17	....	....	....	....	....	....	....	....	....	95	....	17	....	....	....	129
Total	346	10	2	13	....	....	....	....	....	....	1,106	2	31	....	....	....	1,510

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889										
Benton	....	....	....	....	....	....	....	....	67	$1,710
Coos	....	....	....	....	....	....	....	....	20	700
Clatsop	....	....	....	....	5	85.23	$12,900	$3,030	702	97,675
Columbia	....	....	....	....	....	....	....	....	35	2,625
Coos	....	....	....	....	....	....	....	....	76	3,025
Curry	....	....	....	....	7	108	30,000	6,440	41	3,250
Douglas	....	....	....	....	....	....	....	....	98	3,275
Lane	....	....	....	....	....	....	....	....	26	650
Multnomah	....	....	....	....	....	....	....	....	125	9,375
Tillamook	1	71.17	$18,000	$4,000	....	....	....	....	25	2,500
Total	1	71.17	18,000	4,000	10	443.94	42,900	9,530	1,164	125,985

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1890.										
Benton									30	$60
Clackamas									20	70
Clatsop					5	85.23	$12,900	$3,075	739	102,230
Columbia									52	2,000
Coos									31	1,450
Curry					5	358.71	30,000	6,455	41	3,250
Douglas									2	15
Lane									24	60
Multnomah	1	148.97	$10,000	$3,150					140	10,000
Tillamook									25	2,500
Total	1	148.97	10,000	3,150	10	443.94	42,900	9,530	1,113	123,945
1891.										
Benton									45	1,170
Clackamas									30	75
Clatsop	2	82.93	5,000	3,450	5	99.60	24,365	2,880	853	119,950
Columbia									60	3,000
Coos									38	1,007
Curry					5	358.71	29,375	6,130	43	3,350
Douglas									2	10
Lane									21	525
Multnomah	1	148.97	10,000	4,000					132	9,850
Tillamook									26	2,570
Wasco									2	40
Total	3	231.90	15,000	7,450	10	458.31	53,740	9,010	1,372	142,567
1892.										
Benton									50	1,350
Clackamas									30	75
Clatsop	3	98.66	7,300	4,350	12	154.06	30,900	3,725	966	127,970
Columbia									98	3,990
Coos									60	2,000
Curry					5	358.71	29,200	5,820	40	3,475
Douglas									28	2,500
Lane									58	1,900
Multnomah	1	148.97	10,000	4,000	3	42.43	13,000	2,400	137	10,000
Wasco									7	150
Total	4	247.63	17,300	8,350	20	555.20	73,100	11,945	1,494	154,420

Years and counties.	Apparatus of capture.											
	Gill nets.		Pound nets.		Seines.		Wheels.		Dip nets.		Value of lines.	Value of tongs and hoes.	Value of guns, etc.
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.			
1889.													
Benton	55	$3,300										$120	
Clackamas	117	2,930											
Clatsop	568	144,925	99	$73,900	8	$1,875					$1,750		
Columbia	41	5,590											
Coos	140	4,700			5	750					870	25	
Curry	178	3,560			10	1,300							
Douglas	45	6,190	2	800									
Lane	26	1,560											
Multnomah	194	5,450					15	$44,552			2,650		
Tillamook	50	3,750											
Wasco							16	75,500	95	$475			
Total	1,404	181,955	101	74,700	23	7,425	31	120,052	95	475	4,487	145	
1890.													
Benton	18	1,080										125	
Clackamas	118	2,945											
Clatsop	601	152,825	108	76,500	7	2,775							
Columbia	43	5,620									2,240		
Coos	56	2,050			1	250					90	25	
Curry	168	3,560			10	1,800							
Douglas	2	150											
Lane	24	1,440											
Multnomah	154	4,900					13	37,052			4,200		$80
Tillamook	50	3,750											
Wasco							16	70,500	85	425			
Total	1,234	178,320	108	76,500	18	4,825	29	107,552	85	425	6,530	150	80

Table showing by counties the vessels, boats, apparatus, and property employed in the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Apparatus of capture.										Value of lines.	Value of tongs and hoes.	Value of guns, etc.
	Gill nets.		Pound nets.		Seines.		Wheels.		Dip nets.				
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.			
1891.													
Benton	40	$2,400			1	$300						$128	
Clackamas	118	2,950											
Clatsop	667	175,100	142	$100,500	18	10,750							$1,000
Columbia	45	5,650									$2,800		
Coos	70	2,470			2	500					96	25	
Curry	164	3,480			9	2,100							200
Douglas	2	150											
Lane	21	1,260											
Multnomah	125	4,415					12	$31,052			4,550		850
Tillamook	50	3,750			1	300							
Wasco					1	400	18	77,100	60	$300			
Total	1,302	201,625	142	100,500	32	14,350	30	108,152	60	300	7,446	153	2,050
1892.													
Benton	37	2,220			1	300						124	
Clackamas	120	3,000											
Clatsop	677	181,800	245	172,400	13	7,550							1,000
Columbia	45	5,650									4,080		
Coos	107	4,000			6	1,500					100	25	
Curry	160	3,400			8	2,000							200
Douglas	28	3,710											
Lane	58	3,480			1	150							
Multnomah	164	5,000					19	40,752			5,740		850
Wasco			2	1,000	3	1,100	21	92,100	50	250			
Total	1,396	212,260	247	173,400	32	12,600	40	132,852	50	250	10,520	149	2,050

Years and counties.	Value of shore and accessory property.	Cash capital.	Total value of investment.
1889.			
Benton	$14,000	$25,000	$44,130
Clackamas	200		3,920
Clatsop	428,900	358,000	1,124,265
Columbia	2,500	3,000	15,465
Coos	16,000	40,000	65,487
Curry	33,300	55,000	133,350
Douglas	15,000	30,000	55,265
Lane	13,000	30,000	45,210
Multnomah	53,755	31,900	147,882
Tillamook	21,000	20,000	69,850
Wasco	50,500	28,000	154,475
Total	648,245	620,900	1,859,299
1891.			
Benton	$14,000	$11,000	$28,978
Clackamas	300		8,980
Clatsop	393,700	469,000	1,305,070
Columbia	2,500	6,000	19,950
Coos	10,700	10,000	25,466
Curry	31,100	70,000	127,935
Douglas			300
Lane	13,000	7,000	21,785
Multnomah	61,000	55,000	180,732
Tillamook	21,000	10,000	37,625
Wasco	35,650	20,000	133,490
Total	582,950	640,000	1,885,311
1892.			
Benton	14,000	10,000	27,994
Clackamas	300		4,050
Clatsop	413,600	449,000	1,399,600
Columbia	2,500	14,000	30,780
Coos	11,100	20,000	39,050
Curry	30,900	35,000	109,995
Douglas	15,000	20,000	40,810
Lane	24,000	35,000	64,530
Multnomah	88,100	170,000	350,292
Wasco	60,650	50,000	205,250
Total	660,150	803,000	2,272,351

Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon	428,428	$5,968	71,160	$1,343	260,359	$3,117	284,290	$7,106
Silver salmon	444,709	7,269	85,400	1,668	135,383	2,018	88,710	1,330
Crabs	6,628	265	4,200	168	3,521	141	4,125	165
Oysters	150,000	3,125	132,360	2,758	146,040	3,043	147,000	3,062
Total	1,029,765	16,627	293,120	5,937	545,303	8,319	524,125	8,537
Clackamas:								
Blueback salmon	15,220	609	22,340	894	21,140	846	27,225	1,089
Chinook salmon	90,114	3,605	124,114	4,964	88,750	3,550	114,112	4,564
Steelhead salmon	20,670	413	30,206	604	18,112	362	24,214	484
Total	126,004	4,627	176,660	6,462	128,002	4,758	165,551	6,138
Clatsop:								
Black-cod					1,000	8		
Blueback salmon	185,015	3,775	263,715	5,275	126,940	3,191	626,495	15,662
Chinook salmon	9,121,935	449,548	12,047,880	405,528	14,216,080	565,354	12,107,759	484,310
Cultus-cod					800	8		
Flounders							10,000	400
Halibut					28,000	1,400	2,000	90
Rockfish							5,000	250
Shad	29,990	2,999	50,100	4,008	70,500	4,230	109,000	3,270
Silver salmon	407,990	9,619	441,890	5,479	132,580	1,325		
Steelhead salmon	654,740	13,513	766,550	7,664	699,380	7,392	1,316,120	13,161
Fur-seal pelts						8,480		18,000
Total	10,399,670	479,454	13,570,135	427,954	15,275,880	591,388	14,176,365	537,893
Columbia:								
Blueback salmon	17,000	510	25,000	750	15,000	550	20,000	700
Chinook salmon	116,000	4,640	187,000	7,480	115,000	4,600	150,000	6,000
Steelhead salmon	21,000	528	38,000	1,140	22,000	560	30,000	750
Sturgeon	314,730	3,395	358,620	3,996	471,987	5,170	960,795	10,295
Total	468,730	9,073	608,620	13,366	623,987	10,880	1,160,795	17,745
Coos:								
Chinook salmon, fresh	138,841	3,286	17,500	188	29,110	320	52,500	840
Chinook salmon, salted	47,500	1,250	40,000	454	36,250	412	32,500	325
Cultus-cod	26,112	1,305	27,120	1,356	27,615	1,381	26,304	1,315
Halibut	17,250	1,725	16,450	1,647	15,930	1,593	16,870	1,687
Rockfish	84,010	4,200	82,260	4,113	83,220	4,161	81,115	4,055
Silver salmon, fresh	987,009	25,051	126,000	1,890	263,770	3,956	262,500	4,200
Silver salmon, salted	332,500	9,984	280,000	4,200	253,750	3,806	227,500	3,750
Clams	48,720	812	46,500	775	45,600	760	49,500	825
Total	1,681,942	47,613	635,830	14,621	695,245	15,489	748,789	16,772
Curry:								
Chinook salmon, fresh	942,382	26,974	1,100,252	32,353	1,102,313	34,870	685,897	19,920
Chinook salmon, salted	23,400	936	47,100	1,884	61,200	2,448	22,200	888
Silver salmon, fresh	554,358	10,965	238,808	4,662	135,087	2,702	200,353	3,884
Silver salmon, salted	26,600	1,064	33,100	1,324	45,800	1,832	24,600	984
Sea-otter pelts								1,750
Total	1,546,740	39,939	1,419,260	40,223	1,404,400	41,852	933,050	27,476
Douglas:								
Chinook salmon	271,345	5,426	7,000	350	8,000	400	105,000	1,575
Silver salmon	536,655	10,733	13,000	650	14,000	700	754,600	11,319
Total	808,000	16,159	20,000	1,000	22,000	1,100	859,600	12,894
Lane:								
Chinook salmon	168,420	3,368	114,969	862	110,000	825	141,100	1,765
Silver salmon	842,210	21,054	291,621	4,375	223,270	3,350	1,198,00	17,970
Total	1,010,630	24,422	406,590	5,237	333,270	4,175	1,339,00	19,735
Multnomah:								
Black-cod	25,000	1,250						
Blueback salmon	330,240	12,549	1,043,978	45,807	267,610	8,497	1,234,405	33,000
Chinook salmon	387,789	16,012	1,485,339	46,981	491,654	16,728	824,548	25,000
Cultus-cod	75,000	2,250						
Halibut	470,000	9,400						
Steelhead salmon	99,080	3,156	326,823	7,470	126,208	3,482	437,093	11,000
Sturgeon	427,000	5,426	1,082,826	12,283	984,632	12,141	1,552,695	17,000
Fur-seal pelts				15,000		18,000		24,000
Crawfish	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Total	1,834,109	53,043	4,563,966	131,321	1,900,104	63,648	4,068,741	113,000

Table showing by counties and species the yield of the fisheries of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Tillamook:								
Chinook salmon	490,000	$7,840	297,500	$2,975	309,458	$3,705	280,000	$3,360
Silver salmon	285,115	5,702	868,800	13,032	218,500	3,277	1,049,500	15,742
Total	775,115	13,542	1,166,300	16,007	527,958	6,982	1,329,500	19,102
Various:								
Blueback salmon	590,015	17,518	1,588,910	45,205	440,702	11,043	1,232,272	32,542
Chinook salmon	322,833	9,453	1,143,587	32,460	377,644	10,241	832,085	25,084
Silver salmon	67,494	1,170	102,880	1,817	113,030	2,212	371,488	9,835
Steelhead salmon	48,590	1,227	641,410	12,695	256,640	5,160	779,344	21,837
Total	1,038,532	29,368	3,476,787	92,177	1,188,016	28,656	3,215,189	89,298
Wasco counties:								
Black-cod	25,000	1,250			1,000	8		
Landlocked salmon	1,147,090	34,961	3,543,943	97,961	871,392	24,127	3,140,397	83,370
Chinook salmon, fresh	12,478,087	536,120	16,576,301	535,484	17,168,968	643,710	15,577,282	579,007
Chinook salmon, salted	70,900	2,180	87,100	2,338	97,450	2,860	54,700	1,407
Codfish	101,112	3,555	27,120	1,356	28,415	1,389	26,304	1,315
Flounders							10,000	400
Halibut	487,250	11,125	10,450	1,645	43,930	2,993	18,870	1,787
Rockfish	84,010	4,200	82,260	4,113	83,220	4,161	86,115	4,255
Trout	29,990	2,999	50,100	4,008	70,500	4,230	109,000	3,270
Silver salmon, fresh	4,125,540	91,563	2,168,399	33,573	1,175,629	18,640	3,925,451	64,180
Silver salmon, salted	359,100	11,048	313,100	5,524	299,550	5,638	252,100	4,484
Steelhead salmon	844,080	18,837	1,802,989	29,573	1,122,340	16,956	2,586,771	48,552
Sturgeon	741,730	8,821	1,441,446	16,279	1,456,619	17,311	2,513,490	28,001
Fur-seal pelts				15,000		26,480		43,266
Sea-otter pelts								1,729
Crawfish	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Crabs	6,628	265	4,200	168	3,521	141	4,125	495
Clams	48,720	812	46,500	775	45,600	760	49,500	825
Oysters	150,000	3,125	132,360	2,758	146,040	3,043	147,000	3,062
Grand total	20,719,237	733,867	26,337,268	754,305	22,644,165	777,247	28,521,105	872,405

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:								
Chinook salmon	428,428	$5,968						
Silver salmon	444,709	7,269						
Crabs	6,628	265						
Total	879,765	13,502						
Columbia:								
Chinook salmon	15,220	609						
Silver salmon	90,114	3,605						
Steelhead salmon	20,670	413						
Total	126,004	4,627						
Tillamook:								
Chinook salmon	655	13	166,860	$3,281	17,500	$481		
Silver salmon	6,315,960	309,811	2,187,175	108,994	618,800	30,743		
Crabs			29,800	2,980	190	19		
Sturgeon	330,577	8,071			77,413	1,548		
Various salmon	103,560	2,071	383,980	7,724	167,200	3,718		
Total	6,750,752	319,966	2,767,815	122,979	881,103	36,509		
Wasco counties:								
Sturgeon	17,000	510						
Various salmon	116,000	4,640						
Steelhead salmon	22,000	330						
Sturgeon	28,682	846					236,048	$2,547
Total	283,682	6,526					236,048	2,547

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Coos:								
Chinook salmon, fresh	103,394	$2,353	.....	.....	35,447	$933	.....	.....
Chinook salmon, salted	47,500	1,250	.....	.....	.....	.....	.....	.....
Cultus-cod	.....	.....	.....	.....	.....	.....	26,112	$1,305
Halibut	.....	.....	.....	.....	.....	.....	17,250	1,725
Rockfish	.....	.....	.....	.....	.....	.....	84,010	4,200
Silver salmon, fresh	809,773	19,734	.....	.....	177,236	5,317	.....	.....
Silver salmon, salted	332,500	9,984	.....	.....	.....	.....	.....	.....
Total	1,293,167	33,321	.....	.....	212,683	6,250	127,372	7,230
Curry:								
Chinook salmon, fresh	689,280	20,391	.....	.....	253,102	6,583	.....	.....
Chinook salmon, salted	4,000	160	.....	.....	19,400	776	.....	.....
Silver salmon, fresh	7,509	150	.....	.....	546,858	10,815	.....	.....
Silver salmon, salted	9,000	360	.....	.....	17,600	704	.....	.....
Total	709,780	21,061	.....	.....	836,960	18,878	.....	.....
Douglas:								
Chinook salmon	238,345	4,766	33,000	$660	.....	.....	.....	.....
Silver salmon	506,655	10,133	30,000	600	.....	.....	.....	.....
Total	745,000	14,899	63,000	1,260	.....	.....	.....	.....
Lane:								
Chinook salmon	168,420	3,368	.....	.....	.....	.....	.....	.....
Silver salmon	842,210	21,054	.....	.....	.....	.....	.....	.....
Total	1,010,630	24,422	.....	.....	.....	.....	.....	.....
Multnomah:								
Black-cod	.....	.....	.....	.....	.....	.....	25,000	1,250
Blueback salmon	144,905	5,136	.....	.....	.....	.....	.....	.....
Chinook salmon	273,789	11,452	.....	.....	.....	.....	.....	.....
Cultus-cod	.....	.....	.....	.....	.....	.....	75,000	2,250
Halibut	.....	.....	.....	.....	.....	.....	470,000	9,400
Steelhead salmon	72,930	2,111	.....	.....	.....	.....	.....	.....
Sturgeon	.....	.....	.....	.....	.....	.....	427,000	5,430
Total	491,624	18,699	.....	.....	.....	.....	997,000	18,330
Tillamook:								
Chinook salmon	490,000	7,840	.....	.....	.....	.....	.....	.....
Silver salmon	285,115	5,702	.....	.....	.....	.....	.....	.....
Total	775,115	13,542	.....	.....	.....	.....	.....	.....
All counties:								
Black-cod	.....	.....	.....	.....	.....	.....	25,000	1,250
Blueback salmon	177,780	6,268	166,680	3,281	17,500	481	.....	.....
Chinook salmon, fresh	8,013,730	374,194	2,220,175	109,654	907,349	38,259	.....	.....
Chinook salmon, salted	51,500	1,410	.....	.....	19,400	776	.....	.....
Cultus-cod	.....	.....	.....	.....	.....	.....	101,112	3,555
Halibut	.....	.....	.....	.....	.....	.....	487,250	11,125
Rockfish	.....	.....	.....	.....	.....	.....	84,010	4,200
Shad	.....	.....	29,800	2,980	100	10	.....	.....
Silver salmon, fresh	3,226,539	72,113	30,000	600	801,507	17,680	.....	.....
Silver salmon, salted	341,500	10,344	.....	.....	17,600	704	.....	.....
Steelhead salmon	218,160	5,123	383,980	7,724	167,200	3,718	.....	.....
Sturgeon	78,682	848	.....	.....	.....	.....	663,048	7,970
Crabs	6,628	265	.....	.....	.....	.....	.....	.....
Grand total	13,014,519	470,565	2,830,815	124,239	1,930,746	61,637	1,360,420	29,705

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:						
Oysters					150,000	$3,125
Coos:						
Clams					48,720	812
Multnomah:						
Blueback salmon	185,325	$7,413				
Chinook salmon	114,000	4,560				
Steelhead salmon	26,150	1,045				
Crawfish			20,000	$3,000		
Total	325,485	13,018	20,000	3,000		
Wasco:						
Blueback salmon	515,115	15,677	84,500	1,841		
Chinook salmon	265,550	8,307	57,283	1,146		
Silver salmon	31,500	630	35,994	540		
Steelhead salmon	37,140	998	11,450	229		
Total	849,305	25,612	189,227	3,756		
Recapitulation:						
Blueback salmon	700,450	23,090	84,500	1,841		
Chinook salmon	379,550	12,867	57,283	1,146		
Silver salmon	31,500	630	35,994	540		
Steelhead salmon	63,290	2,043	11,450	229		
Crawfish			20,000	3,000		
Clams					48,720	812
Oysters					150,000	3,125
Grand total	1,174,790	38,630	209,227	6,756	198,720	3,937

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1890.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:								
Chinook salmon	71,160	$1,343						
Silver salmon	85,400	1,668						
Crabs	4,200	168						
Total	160,760	3,179						
Columbia:								
Blueback salmon	22,340	894						
Chinook salmon	124,114	4,964						
Steelhead salmon	30,206	604						
Total	176,660	6,462						
Coos:								
Blueback salmon			252,465	$5,050	11,250	$225		
Chinook salmon	9,176,655	303,143	2,602,475	93,385	268,750	9,000		
Cod			49,570	3,965	530	43		
Silver salmon	364,556	3,932			77,334	1,547		
Steelhead salmon	160,420	1,604	516,000	5,159	90,130	901		
Total	9,701,631	308,679	3,420,510	107,559	447,904	11,716		
Curry:								
Blueback salmon	25,000	750						
Chinook salmon	187,000	7,480						
Steelhead salmon	38,000	1,140						
Sturgeon	89,659	998					268,961	$2,998
Total	339,659	10,368					268,961	2,998
Douglas:								
Chinook salmon, fresh	14,000	148			3,500	40		
Chinook salmon, salted	40,000	454						
Halibut							27,120	1,356
Rockfish							16,450	1,645
Silver salmon, fresh	101,000	1,515			25,000	375	82,260	4,113
Silver salmon salted	280,000	4,200						
Total	435,000	6,317			28,500	415	125,830	7,114

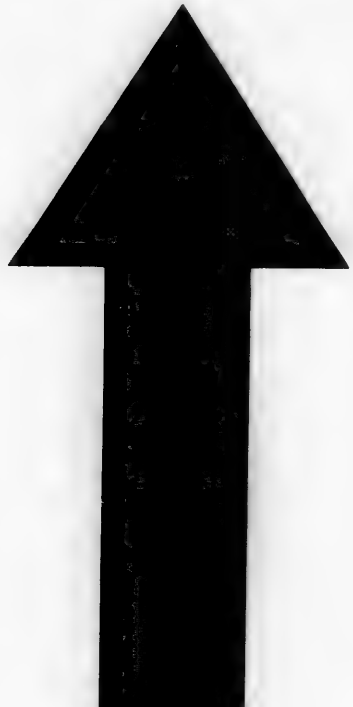
Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1889—Continued.

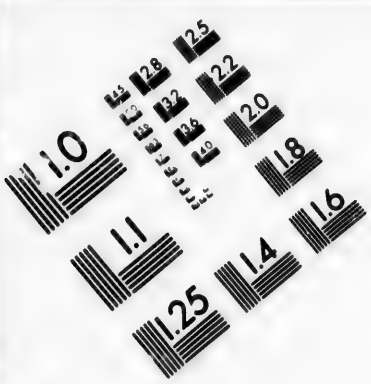
Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Curry:								
Chinook salmon, fresh	983,450	$29,504			116,802	$2,849		
Chinook salmon, salted	11,400	456			35,700	1,428		
Silver salmon, fresh					238,808	4,662		
Silver salmon, salted	6,000	240			27,100	1,084		
Total	1,000,850	30,200			418,410	10,023		
Douglas:								
Chinook salmon	7,000	350						
Silver salmon	13,000	650						
Total	20,000	1,000						
Lane:								
Chinook salmon	114,969	862						
Silver salmon	291,621	4,375						
Total	406,590	5,237						
Multnomah:								
Blueback salmon	420,993	9,148						
Chinook salmon	423,339	15,122						
Steelhead salmon	145,843	2,041						
Sturgeon							1,082,826	$1
Total	990,175	26,311					1,082,826	1
Tillamook:								
Chinook salmon	297,560	2,975						
Silver salmon	868,800	13,032						
Total	1,166,360	16,007						
All counties:								
Blueback salmon	468,333	10,792	252,465	$5,050	11,250	225		
Chinook salmon, fresh	11,390,187	365,891	2,602,275	93,385	389,052	11,889		
Chinook salmon, salted	51,400	910			35,700	1,428		
Cultus-cod							27,120	1
Halibut							16,450	1
Rockfish							82,260	4
Shad			49,570	3,965	530	43		
Silver salmon, fresh	1,724,377	25,172			341,142	6,584		
Silver salmon, salted	286,000	4,440			27,100	1,084		
Steelhead salmon	374,469	5,389	516,000	5,159	90,130	901		
Sturgeon	89,659	998					1,351,787	13
Crabs	4,200	168						
Grand total	14,397,625	413,760	3,420,510	107,559	894,904	22,154	1,477,017	22

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns,	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters					132,360	$2,758		
Coos:								
Clams					46,500	775		
Multnomah:								
Blueback salmon	1,222,985	$36,689						
Chinook salmon	1,062,000	31,859						
Steelhead salmon	180,980	5,429						
Fur-seal pelts								
Crawfish			25,000	$3,750				
Total	2,465,965	73,977	25,000	3,750				15
Wasco:								
Blueback salmon	1,425,170	42,755	163,740	2,450				
Chinook salmon	1,018,053	30,502	125,534	1,958				
Silver salmon	31,620	749	71,260	1,068				
Steelhead salmon	531,410	11,045	110,000	1,650				
Total	3,006,253	85,051	470,534	7,126				
All counties:								
Blueback salmon	2,648,155	79,444	163,740	2,450				
Chinook salmon	2,080,053	62,361	125,534	1,958				
Silver salmon	31,620	749	71,260	1,068				
Steelhead salmon	712,390	16,474	110,000	1,650				
Fur-seal pelts								15
Crawfish			25,000	3,750				
Clams					46,500	775		
Oysters					132,360	2,758		
Grand total	5,472,218	159,028	495,534	10,876	178,860	3,533		15

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clatsop:								
Chinook salmon	182,359	$2,337			78,000	$780		
Silver salmon	72,383	1,388			63,000	630		
Crabs	3,521	141						
Total	258,263	3,866			141,000	1,410		
Tuckamas:								
Blueback salmon	21,140	846						
Chinook salmon	88,750	3,550						
Steelhead salmon	18,112	362						
Total	128,002	4,758						
Tillamook:								
Black cod							1,000	$8
Blueback salmon			115,680	$2,896	11,260	295		
Chinook salmon	11,004,180	439,252	2,740,325	109,613	412,175	16,489		
Cultus cod							800	8
Halibut							28,000	1,400
Shad			62,000	3,720	8,500	510		
Silver salmon	132,580	1,325						
Steelhead salmon	102,800	971	548,600	5,503	47,920	858		
Total	11,299,560	441,548	3,466,605	121,792	479,855	18,152	29,800	1,416
Columbia:								
Blueback salmon	15,000	550						
Chinook salmon	135,000	4,600						
Steelhead salmon	22,000	560						
Sturgeon	118,001	1,292					353,986	3,878
Total	270,001	7,002					353,986	3,878
Coos:								
Chinook salmon, fresh	14,000	148			15,110	172		
Chinook salmon, salted	36,250	412						
Cultus cod							27,615	1,381
Halibut							15,930	1,593
Rockfish							83,220	4,161
Silver salmon, fresh	101,000	1,515			102,770	1,541		
Silver salmon, salted	253,750	3,806						
Total	405,000	5,881			117,880	1,713	126,765	7,135
Curry:								
Chinook salmon, fresh	1,117,285	33,519			45,028	1,351		
Chinook salmon, salted	12,500	500			48,700	1,948		
Silver salmon, fresh					135,087	2,702		
Silver salmon, salted	2,500	100			43,300	1,732		
Total	1,132,285	34,119			272,115	7,733		
Douglas:								
Chinook salmon	8,000	400						
Silver salmon	14,000	700						
Total	22,000	1,100						
Lane:								
Chinook salmon	110,000	825						
Silver salmon	223,270	3,350						
Total	333,270	4,175						
Multnomah:								
Blueback salmon	151,215	4,945						
Chinook salmon	325,754	11,561						
Steelhead salmon	78,268	2,044						
Sturgeon							984,632	12,141
Total	555,237	18,550					984,632	12,141
Tillamook:								
Chinook salmon	259,598	3,115			49,860	590		
Silver salmon	178,500	2,677			40,000	600		
Total	438,098	5,792			89,860	1,190		





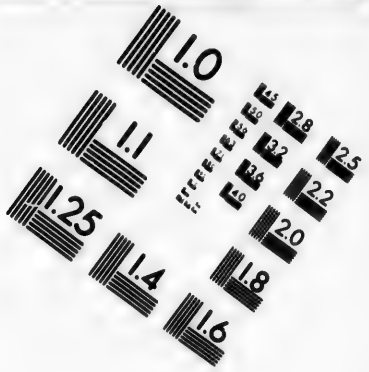
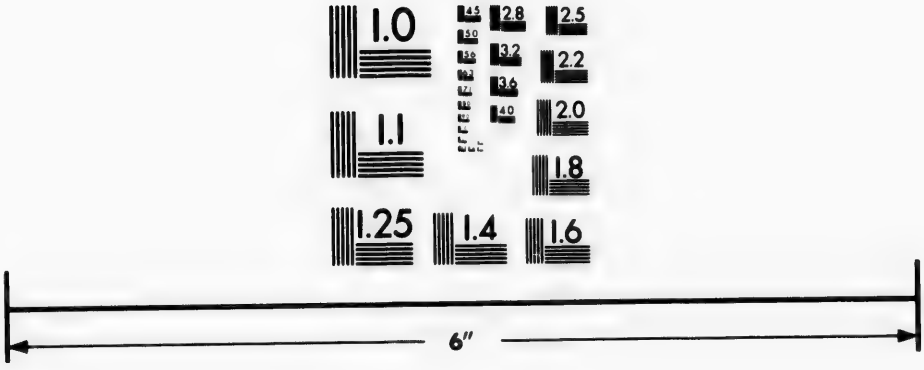
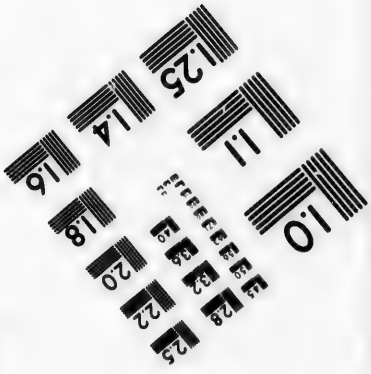


IMAGE EVALUATION TEST TARGET (MT-3)





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23 WEST MAIN STREET
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Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1891—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Silver salmon					6,000	$190		
Steelhead salmon					3,000	90		
Total					9,000	280		
All counties:								
Black-cod							1,000	$8
Blueback salmon	187,355	$6,341	115,680	$2,896	11,260	295		
Chinook salmon, fresh	13,284,926	499,307	2,740,325	109,613	600,173	19,382		
Chinook salmon, salted	48,750	912			48,700	1,948		
Cultus-cod							28,415	1,139
Halibut							43,930	2,93
Rockfish							83,220	4,161
Shad			02,000	3,720	8,500	510		
Silver salmon, fresh	721,733	10,955			346,857	5,663		
Silver salmon, salted	250,250	3,906			43,300	1,732		
Steelhead salmon	221,180	3,937	548,660	5,563	50,920	948		
Sturgeon	118,001	1,292					1,338,618	16,019
Crabs	3,521	141						
Grand total	14,841,716	526,791	3,466,665	121,792	1,109,710	30,478	1,495,183	24,570

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters					146,040	$3,043		
Clatsop:								
Fur-seal pelts								$8,48
Coos:								
Clams					45,600	760		
Multnomah:								
Blueback salmon	116,395	$3,552						
Chinook salmon	165,900	5,167						
Steelhead salmon	47,940	1,438						
Fur-seal pelts								18,000
Crawfish			30,000	$4,800				
Total	330,235	10,157	30,000	4,800				18,000
Wasco:								
Blueback salmon	288,520	8,655	152,182	2,388				
Chinook salmon	304,053	9,122	73,591	1,119				
Silver salmon	34,440	933	72,590	1,089				
Steelhead salmon	179,040	3,930	74,600	1,140				
Total	806,053	22,640	372,963	5,736				
All counties:								
Blueback salmon	404,915	12,207	152,182	2,388				
Chinook salmon	469,953	14,289	73,591	1,119				
Silver salmon	34,440	933	72,590	1,089				
Steelhead salmon	226,980	5,368	74,600	1,140				
Fur-seal pelts								26,48
Crawfish			30,000	4,800				
Clams					45,600	760		
Oysters					146,040	3,043		
Grand total	1,136,288	32,797	402,963	10,536	191,640	3,803		26,48

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Chinook salmon	246,790	$3,021			37,500	$375		
Silver salmon	76,710	1,464			12,000	120		
Crabs	4,125	495						
Total	327,625	4,980			49,500	495		
Clackamas:								
Blueback salmon	27,225	1,089						
Chinook salmon	114,112	4,564						
Steelhead salmon	24,214	630						
Total	165,551	6,283						
Clatsop:								
Blueback salmon			494,210	$12,360	132,285	3,620		
Chinook salmon	8,314,650	332,622	3,153,925	126,127	639,175	25,567		
Flounders							10,000	$400
Halibut							2,000	100
Rockfish							5,000	200
Shad			94,000	2,820	15,000	450		
Steelhead salmon	46,480	499	1,132,400	11,471	137,240	2,065		
Total	8,361,130	333,121	4,874,535	152,718	923,700	31,702	17,000	700
Columbia:								
Blueback salmon	20,000	700						
Chinook salmon	150,000	6,000						
Steelhead salmon	30,000	750						
Sturgeon	120,283	1,287					840,512	8,993
Total	320,283	8,737					840,512	8,993
Coos:								
Chinook salmon, fresh	25,000	398			27,500	438		
Chinook salmon, salted	32,500	517						
Cultus cod							26,304	1,315
Halibut							16,870	1,687
Rockfish							81,115	4,055
Silver salmon, fresh	137,500	2,114			125,000	1,923		
Silver salmon, salted	227,500	3,500						
Total	422,500	6,529			152,500	2,361	124,289	7,057
Curry:								
Chinook salmon, fresh	583,570	17,507			102,327	2,404		
Chinook salmon, salted	2,000	80			20,209	810		
Silver salmon, fresh					200,353	3,874		
Silver salmon, salted	3,000	120			21,600	864		
Total	588,570	17,707			344,480	7,952		
Douglas:								
Chinook salmon	105,000	1,312						
Silver salmon	754,600	11,314						
Total	859,600	12,626						
Lane:								
Chinook salmon	136,950	1,711			4,150	52		
Silver salmon	1,186,140	17,612			12,160	182		
Total	1,323,090	19,323			16,310	234		
Multnomah:								
Blueback salmon	488,195	10,673						
Chinook salmon	372,898	14,915						
Steelhead salmon	140,983	2,477						
Sturgeon							1,552,695	17,721
Total	1,002,076	28,065					1,552,695	17,721
Tillamook:								
Chinook salmon	280,000	3,360						
Silver salmon	1,049,500	15,742						
Total	1,329,500	19,102						

Table showing by counties, species, and apparatus of capture the yield of the fisheries of Oregon in 1892—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Wasco:								
Blueback salmon			5,000	$150	105,450	$3,164		
Chinook salmon			51,180	2,140	49,540	1,511		
Silver salmon					10,000	300		
Steelhead salmon			3,000	45	48,112	962		
Total			59,180	2,335	213,102	5,937		
All counties:								
Blueback salmon	535,420	$12,462	499,210	12,510	237,735	6,784		
Chinook salmon, fresh	10,328,970	385,410	3,205,105	128,267	860,192	30,347		
Chinook salmon, salted	34,500	597			20,200	810		
Cultus-cod							26,304	$1,315
Flounders							10,000	400
Halibut							18,870	1,787
Rockfish							86,115	4,233
Shad			94,000	2,820	15,000	450		
Silver salmon, fresh	3,204,450	48,246			359,513	6,399		
Silver salmon, salted	230,500	3,620			21,600	864		
Steelhead salmon	241,677	4,356	1,135,400	11,456	185,352	3,027		
Sturgeon	120,283	1,287					2,393,207	26,710
Crabs	4,125	495						
Grand total	14,699,925	456,473	4,933,715	155,053	1,699,592	48,681	2,534,496	34,471

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:								
Oysters					147,000	$3,062		
Clatsop:								
Fur seals								$18,780
Coos:								
Clams					49,500	825		
Curry:								
Sea-otter pelts								1,750
Multnomah:								
Blueback salmon	746,210	$22,386						
Chinook salmon	451,650	13,550						
Steelhead salmon	296,110	8,883						
Fur-seal pelts								24,475
Crawfish			20,000	$3,000				
Total	1,493,970	44,819	20,000	3,000				24,475
Wasco:								
Blueback salmon	826,713	24,801	295,109	4,427				
Chinook salmon	697,465	20,924	33,900	509				
Silver salmon	274,785	8,234	86,703	1,301				
Steelhead salmon	660,430	19,813	67,802	1,017				
Total	2,459,393	73,772	483,514	7,254				
All counties:								
Blueback salmon	1,572,923	47,187	295,109	4,427				
Chinook salmon	1,149,115	34,474	33,900	509				
Silver salmon	274,785	8,234	86,703	1,301				
Steelhead salmon	956,540	28,696	67,802	1,017				
Fur-seal pelts								43,255
Sea-otter pelts								1,750
Crawfish			20,000	3,000				
Clams					49,500	825		
Oysters					147,000	3,062		
Grand total	3,953,363	118,591	503,514	10,254	196,500	3,887		44,999

Table showing by counties the extent of the salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892.

Counties and years.	No. of employees.	Canneries. No.	Value.	Cash capital.
Benton:				
1889	34	1	$10,000	$25,000
1891	22	1	10,000	11,000
1892	22	1	10,000	10,000
Clatsop:				
1889	684	11	370,500	354,500
1890	737	10	347,500	396,500
1891	830	10	385,000	461,900
1892	838	10	365,000	465,000
Coos:				
1889	87	2	14,500	40,000
1891	37	1	9,000	10,000
1892	35	1	9,000	20,000
Curry:				
1889	105	2	32,300	55,000
1890	78	1	30,000	52,000
1891	72	1	30,000	52,000
1892	63	1	30,000	35,000
Douglas:				
1889	49	1	15,000	30,000
1892	51	1	13,000	20,000
Lane:				
1889	40	1	13,000	30,000
1890	36	1	13,000	10,000
Lane—cont'd.				
1891	32	1	$13,000	$7,000
1892	91	2	24,000	35,000
Multnomah:				
1889	157	2	46,000	29,000
1890	191	2	46,000	133,000
1891	158	2	46,000	46,000
1892	225	3	71,000	150,000
Tillamook:				
1889	56	1	21,000	20,000
1890	59	1	21,000	27,000
1891	45	1	21,000	10,000
1892	63	1	21,000	30,000
Wasco:				
1889	69	1	30,000	28,000
1890	89	2	55,000	70,000
1891	69	1	30,000	20,000
1892	122	2	55,000	70,000
Total:				
1889	1,281	22	552,300	611,500
1890	1,190	17	512,500	688,500
1891	1,265	18	544,000	620,000
1892	1,510	22	598,000	835,000

Salmon utilized in canning.

Counties and years.	Chinook. Pounds.	Value.	Blueback. Pounds.	Value.	Steelhead. Pounds.	Value.	Silver. Pounds.	Value.	Total. Pounds.	Value.
Benton:										
1889	520,740	$3,849					309,260	$4,639	630,000	$8,488
1891	193,000	1,930					55,800	558	248,800	2,488
1892	224,000	2,600					14,000	180	238,000	2,780
Clatsop:										
1889	8,866,085	430,614	213,378	$10,669	681,846	$20,455	331,940	8,097	10,093,249	469,835
1890	11,298,416	342,237	242,352	4,847	869,088	8,691	372,890	5,059	12,782,746	361,434
1891	13,974,042	555,874	145,860	2,917	802,164	10,428	141,680	1,417	15,063,746	570,636
1892	12,328,418	483,635	629,244	14,169	1,383,954	22,143	574,000	5,740	14,915,616	525,687
Coos:										
1889	32,500	487					455,000	9,100	487,500	9,587
1891	29,100	320					158,770	2,381	187,870	2,701
1892	52,500	836					262,500	4,037	315,000	4,873
Curry:										
1889	871,757	25,687					509,483	10,190	1,381,240	35,877
1890	1,048,027	31,441					193,533	3,871	1,241,560	55,312
1891	1,162,113	34,870					135,087	2,702	1,297,200	37,572
1892	632,637	17,507					147,323	2,946	779,960	20,453
Douglas:										
1889	270,900	5,418					534,100	10,682	805,000	16,100
1892	105,000	1,312					754,600	11,314	859,600	12,626
Lane:										
1889	168,420	3,368					614,810	16,370	783,230	19,738
1890	107,100	803					178,221	2,675	285,321	3,478
1891	49,700	373					98,770	1,482	148,470	1,855
1892	130,900	1,636					1,149,400	17,140	1,280,300	18,776
Multnomah:										
1889	322,475	12,899	359,860	14,395	62,240	2,499			744,575	29,793
1890	1,393,815	41,814	2,084,645	62,499	345,350	10,360			3,823,810	114,673
1891	677,234	20,316	331,855	9,955	216,060	6,482			1,225,149	36,753
1892	1,313,300	39,400	2,079,855	60,639	960,370	28,911			4,353,525	128,950
Tillamook:										
1889	490,000	7,840					252,000	5,040	742,000	12,880
1890	297,500	2,975					840,000	12,600	1,137,500	15,575
1891	309,610	3,715					147,000	2,205	456,610	5,920
1892	280,000	3,360					1,015,000	15,225	1,295,000	18,585
Wasco:										
1889	261,732	8,179	488,032	14,641	31,500	631			781,264	23,451
1890	670,871	20,126	1,391,880	41,756	490,000	9,318			2,552,751	71,200
1891	220,680	6,800	253,820	7,615	192,220	4,324			672,700	18,739
1892	549,120	16,443	768,210	23,045	704,195	13,536	374,185	7,484	2,395,710	60,508
Total:										
1889	11,604,609	498,341	1,061,270	39,705	775,586	23,585	3,006,593	64,118	16,448,058	625,749
1890	14,815,729	439,396	3,718,877	109,102	1,704,438	28,309	1,584,644	24,805	21,823,688	601,672
1891	16,621,459	624,198	731,535	20,487	1,210,444	21,234	737,107	10,745	19,300,545	676,664
1892	15,615,875	566,729	3,477,309	97,853	3,048,519	64,590	4,291,008	64,066	26,432,711	793,238

Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Cases of salmon packed.									
	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:										
1889	4,582	$25,201					4,418	$19,881	9,000	$45,082
1891	2,800	14,700					800	3,600	3,600	18,300
1892	3,200	16,800					200	900	3,400	17,700
Clatsop:										
1889	136,129	811,174	3,238	$18,467	10,331	$43,906	4,742	19,468	154,440	893,015
1890	170,938	985,041	3,672	20,196	13,168	52,672	5,330	19,055	193,108	1,077,564
1891	211,621	1,211,105	2,210	12,154	9,750	39,000	2,024	7,084	225,605	1,269,343
1892	186,673	1,079,103	9,534	62,437	20,969	83,876	8,200	28,700	225,376	1,254,116
Coos:										
1889	500	2,750					6,500	29,250	7,000	32,000
1891	413	2,271					2,268	11,149	2,681	13,420
1892	750	3,750					3,750	15,937	4,500	19,687
Curry:										
1889	13,360	80,160					7,836	34,862	21,196	115,022
1890	16,125	90,289					2,981	12,669	19,106	102,958
1891	17,882	100,139					2,078	9,641	19,960	109,780
1892	9,733	54,505					2,267	9,634	12,000	64,139
Douglas:										
1889	3,870	20,317					7,630	34,335	11,500	54,652
1892	1,500	7,500					10,780	43,120	12,280	50,620
Lane:										
1889	2,406	13,954					8,783	44,788	11,189	58,742
1890	1,530	8,032					2,547	12,353	4,077	20,385
1891	710	3,727					1,411	6,878	2,121	10,605
1892	1,870	9,817					16,420	73,433	18,290	81,250
Multnomah:										
1889	4,613	27,678	5,412	30,020	911	3,943			10,936	61,641
1890	19,912	115,489	29,795	163,872	6,440	25,760			56,147	305,121
1891	9,868	57,234	5,023	27,626	3,088	12,352			17,979	97,212
1892	21,292	123,493	29,169	160,429	13,913	55,652			64,374	339,574
Tillamook:										
1889	7,000	31,500					3,600	14,400	10,600	45,900
1890	4,250	21,250					12,000	48,000	16,250	69,250
1891	4,423	22,115					2,103	8,400	6,526	30,515
1892	4,000	20,000					14,500	58,000	18,500	78,000
Wasco:										
1889	3,739	22,434	7,329	42,141	450	2,050			11,518	66,625
1890	9,691	55,797	19,884	84,036	7,050	28,000			36,575	167,833
1891	3,238	17,809	3,626	19,036	2,746	10,884			9,610	47,729
1892	8,666	49,904	12,403	65,118	10,521	42,054	4,176	20,880	35,766	177,956
Total:										
1889	176,199	1,035,168	15,979	90,628	11,692	49,899	43,509	196,984	247,379	1,372,679
1890	222,446	1,275,898	53,351	268,104	26,608	106,432	22,858	92,677	325,263	1,743,111
1891	250,955	1,429,100	10,859	58,816	15,584	62,236	10,681	46,752	288,079	1,596,304
1892	237,684	1,364,872	51,106	287,984	45,403	181,612	60,293	250,604	394,486	2,085,072

Counties and years.	Quantity of salmon salted.						Barrels salted.					
	Chinook.		Silver.		Total.		Chinook.		Silver.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	No.	Value.	No.	Value.	No.	Value.
Benton:												
1889			15,000	$225	15,000	$225			50	$100	50	$100
1891			13,200	132	13,200	132			44	352	44	352
1892			15,000	175	15,000	175			50	400	50	400
Clatsop:												
1889			30,000	600	30,000	600			100	800	100	800
1890	240,000	$6,600	31,500	315	271,500	6,915	800	$7,200	105	840	905	8,040
1891			28,500	285	28,500	285			95	760	95	760
1892			30,600	306	30,600	306			102	816	102	816
Curry:												
1889	12,000	340	4,500	90	16,500	430	40	360	15	120	55	480
1891			16,500	330	16,500	330			55	440	55	440
Lane:												
1889			227,400	4,684	227,400	4,684			758	6,064	758	6,064
1890	7,869	59	113,400	1,700	121,269	1,759	26	208	378	3,000	404	3,208
1891	60,500	452	124,500	1,868	184,800	2,320	201	1,608	415	3,320	616	4,928
1892	10,200	127	48,900	654	59,100	781	34	272	163	1,304	197	1,576
Tillamook:												
1889			33,600	660	33,600	660			112	896	112	896
1890			27,900	418	27,900	418			93	745	93	745
1891			31,500	472	31,500	472			105	840	105	840
1892			34,530	517	34,500	517			115	920	115	920
Total:												
1889	12,000	340	310,500	6,259	322,500	6,599	40	360	1,035	8,280	1,075	8,640
1890	247,869	6,659	172,800	2,433	420,669	9,092	826	7,408	576	4,585	1,402	11,993
1891	60,500	452	214,200	3,087	274,500	3,539	201	1,608	714	5,712	915	7,320
1892	10,200	127	129,000	1,652	139,200	1,779	34	272	430	3,440	464	3,712

Extent of salmon-canning industry of Oregon in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Total quantity of fresh salmon utilized.									
	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Benton:										
1889	320,740	$3,849					324,260	$4,864	645,000	$8,713
1891	193,000	1,930					69,000	690	262,000	2,620
1892	224,000	2,600					29,000	355	253,000	2,955
Clatsop:										
1889	8,866,085	430,614	213,378	$10,669	681,846	$20,455	361,940	8,697	10,123,249	470,435
1890	11,538,416	348,837	242,352	4,847	869,088	8,691	404,390	5,974	13,054,246	368,349
1891	13,974,942	555,874	145,860	2,917	802,164	10,428	170,180	1,702	15,092,246	570,921
1892	12,328,418	483,635	629,244	14,169	1,383,954	22,143	604,600	6,046	14,946,216	525,993
Coos:										
1889	32,500	487					455,000	9,100	487,500	9,587
1891	20,100	320					158,770	2,381	187,870	2,701
1892	52,500	836					262,500	4,037	315,000	4,873
Curry:										
1889	883,757	26,027					513,983	10,280	1,397,740	36,307
1890	1,048,027	31,441					193,533	3,871	1,241,560	35,312
1891	1,162,113	34,870					151,587	3,032	1,313,700	37,902
1892	632,637	17,507					147,323	2,946	779,960	20,453
Douglas:										
1889	270,900	5,418					534,100	10,682	805,000	16,100
1892	105,000	1,312					754,600	11,314	859,600	12,626
Lane:										
1889	168,420	3,368					842,210	21,054	1,010,630	24,422
1890	114,969	862					291,621	4,375	406,590	5,237
1891	110,000	825					223,270	3,350	333,270	4,175
1892	141,100	1,763					1,198,300	17,794	1,339,400	19,557
Multnomah:										
1889	322,475	12,899	359,860	14,395	62,240	2,499			744,575	29,793
1890	1,393,815	41,814	2,084,645	62,499	345,350	10,360			3,823,810	114,673
1891	677,234	20,316	331,855	9,955	216,060	6,482			1,225,149	36,753
1892	1,313,300	39,400	2,079,855	60,639	960,370	28,911			4,353,525	128,950
Tillamook:										
1889	490,000	7,840					285,600	5,700	775,600	13,540
1890	207,500	2,975					867,900	13,018	1,165,400	15,993
1891	309,610	3,715					178,500	2,677	488,110	6,392
1892	280,000	3,360					1,049,500	15,742	1,329,500	19,102
Wasco:										
1889	261,732	8,179	488,032	14,641	31,500	631			781,264	23,451
1890	670,871	20,126	1,391,880	41,756	490,000	9,318			2,552,751	71,200
1891	226,660	6,800	253,820	7,615	192,220	4,324			672,700	18,739
1892	549,120	[illegible]443	768,210	23,045	704,195	13,536	374,185	7,484	2,395,710	60,508
Total:										
1889	11,616,609	4[illegible],681	1,061,270	39,705	775,586	23,585	3,317,093	70,377	16,770,558	632,348
1890	15,063,598	446,055	3,718,877	109,102	1,704,438	28,369	1,757,444	27,238	22,244,357	610,764
1891	16,681,759	624,650	731,535	20,487	1,210,444	21,234	951,307	13,832	19,575,045	680,203
1892	15,626,075	566,856	3,477,309	97,853	3,048,519	64,590	4,420,008	65,718	26,571,911	795,017

CURRY COUNTY.

The fisheries of this, the most southern county of the State, continue to be confined to the taking of salmon, although other anadromous species are, in their season, found entering some of the rivers, while numerous other fish are found in the ocean just outside the mouths of the streams. The five rivers of the county in which commercial fishing is prosecuted (Rogue, Windchuck, Chetco, Sikhs, and Elk) have been described in a former report. The Sikhs and Elk are of little importance as fishing streams except to the ranchers living near them.

Rogue River.—This, next to the Columbia, is the largest and longest coast river in Oregon. It has spring and fall runs of chinook salmon, and its fisheries continue of great importance. The catch of salmon shows considerable fluctuation, which is, in a measure, dependent on the amount of artificial propagation carried on at the private hatchery on the river. The marked decrease in the yield in 1892 was thought

to be due to some unknown natural causes. The catch represents about the productive capacity of the river and, as it is all used for canning, a statement of the salmon pack will show the abundance of the fish. The number of canned salmon prepared on the river in each of the ten years ending in 1892 was as follows:

Years.	Cases.	Years.	Cases.
1883	10,156	1888	21,0[illegible]
1884	12,576	1889	20,2[illegible]
1885	9,110	1890	19,[illegible]
1886	12,147	1891	19,9[illegible]
1887	17,216	1892	12,0[illegible]

Salmon fishing on the Rogue River is limited by State law; the open season is from April 1 to November 15. By far the largest part of the catch is made during what is known as the spring run, between April 1 and June 30. The summer catch is taken between July 1 and August 30, and the fall catch represents the remainder of the open season.

Windchuck River.—A few salmon run up this small stream in spring, but the supply is too limited to warrant special operations, and the only fishing is done in September and October, when the regular run is in progress. Two haul seines are here used, and the catch is salted or sold fresh. The catch in the four years ending 1892 was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1889	16,000	.....	16,000
1890	10,000	85,000	95,000
1891	10,000	75,000	85,000
1892	30,000	.....	30,000

The fish sold fresh were sent to a salmon cannery on Smith River, California. In 1889 and 1892, when that cannery was idle, the catch was much reduced and had to be salted owing to lack of a market and absence of facilities for shipping. The few fishermen living on this small but beautiful stream take much interest in the fisheries, and in their primitive way have made some attempts at propagating salmon.

Chetko River.—This small stream has its mouth near the State line of California and Oregon. Twelve fishermen, using two haul seines, represent the full extent of the fisheries. In September chinook salmon are taken, and in October the run consists mostly of silver salmon. When the cannery on Smith River is open, most of the catch finds a market there, otherwise it must be salted. The quantity of the catch in 1889 to 1892, inclusive, was as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1889	73,000	33,000	103,000
1890	10,000	108,000	118,000
1891	30,000	93,000	123,000
1892	56,000	.....	56,000

Sikhs River.—This river is of some importance to the ranchers living near by, who depend on it for their supply of fish food, and some years a small quantity of fish is salted for market. In 1888, 20,000 pounds of fresh salmon were sold to a cannery on Coquille River, and in 1889 30,000 pounds to a cannery on Elk River. In 1891–92 no fish were taken except those consumed locally by ranchers. The output of this stream in recent years has been as follows:

Years.	Salted.	Fresh.	Total.
	Pounds.	*Pounds.*	*Pounds.*
[illegible]	45,000	.....	45,000
[illegible]	12,000	20,000	32,000
[illegible]	20,000	60,000	80,000
[illegible]	30,000	.....	30,000

Elk River.—For a short time each year this stream is fished by a few ranchers living near its mouth. The river has only a small run of salmon, and is so inconveniently situated that its fisheries will probably never have very much importance. In recent years the catch of the ranchers has amounted to only about 50 barrels of salt fish. In 1889 a cannery was established in connection with a steam sawmill at the mouth of the river. Some 900 cases of salmon were canned, but the business proved unsatisfactory and was not resumed. The output of the Elk River since 1887 has been as follows:

Years.	Salted.	Fresh.	Canned.	Total.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*
[illegible]	45,000	.....	.....	45,000
[illegible]	12,000	20,000	.....	32,000
[illegible]	15,000	20,000	58 500	93,000
[illegible]	15,000	.....	.....	15,000
[illegible]	15,000	.....	.....	15,000

Sea-otter hunting.—In 1891 the high price of sea-otter pelts led to the formation of two bands of hunters in Curry County. Twelve men, armed with rifles and using two sail and three row boats, skirted the coast from Cape Blanco to Rogue River, weather permitting, during March and April and August and September. At night the men camp at some desirable point. Some of their camping stations are located near high bluffs that have a fringe of timber along the ridge overlooking the sea. Such a spot near the feeding-grounds of the otter is a favorite place for a camp, for in the branches of some tall pine the hunter has his lookout station. A few boughs are chopped off and made into a comfortable resting-place up among the branches, and here one of the hunters will lie for hours, concealed by the thick foliage from view of shore or sea animal. His lofty location gives him an uninterrupted sea view for miles. His boat is close at hand. In case an otter shows up within range of a rifle, it is shot, and the hunter or

one of his companions in hiding is quickly in the boat and going for the game. While some of the men are thus engaged, others may be miles away sailing along the coast with a sharp lookout for otters.

The number of otters killed is small, but they are of large size and have very fine fur, the pelts bringing from $150 to $200 each, and in some cases much more. During 1891, 20 otters were secured, and in one week in September, 1892, when the writer visited one of these unique tree-top stations, 8 otters were killed, the total catch for the year being 13, valued at $133 each. In 1893 the number taken was 17, having an average value of $157.

COOS COUNTY.

When contrasted with the last investigation, the fisheries of this county present few new features. Coquille River and Coos River and Bay are the fishing-grounds. The only catch of the rivers is salmon. A little more attention is given to the bay fisheries near Bandon and Empire City, where some halibut, perch, and cultus-cod are taken; these fish, with flounders and other varieties of salt-water fish, are found abundantly, but the demand is limited to local use and only small quantities are taken.

Coquille River.—Owing to a number of causes the fisheries of the Coquille have not been up to the average during the past few years. Only one cannery was packing during 1889, 1891, and 1892, and none during 1890. The run of fish was good in 1889, and the single cannery in operation packed 9,115 cases, of which one-sixth were chinook and five-sixths silver salmon; 50 barrels were also salted. The fishermen received 50 cents each for chinook and 30 cents each for silver salmon. Prices of canned salmon were low during the fall and winter, and gave little encouragement to canners; in consequence, during 1890, for the first season in a number of years, no salmon were canned on the river. A light catch was made and 200 barrels were salted. In 1891 the one cannery once more packed, but the run was light and only 2,684 cases were canned and 150 barrels salted, the fishermen receiving 25 cents each for chinook and 15 cents for silver salmon. In 1892 salmon were very abundant, more so than for a number of years. The run of the previous year having been so light, a large run was not expected and preparations had only been made for a small pack. The result of the year's work was 4,500 cases. On account of a scarcity of cans the surplus catch was salted, and 650 barrels were thus prepared. The fishermen received 35 cents each for chinook and 20 cents for silver salmon, the catch consisting of one-eighth chinook and seven-eighths silver salmon. A few fishermen of Bandon, near the mouth of the river, fished outside with hook and line, their catch in 1892 being 10,250 pounds of halibut, 9,112 pounds of cultus-cod, and 36,010 pounds of rockfish.

Coos River and Bay.—The one salmon cannery at Empire City being idle in 1890, 1891, and 1892, the fisheries were not given so much attention as in past years. The salmon catch had to be salted, and

amounted to 900, 800, and 1,400 barrels, respectively, in the years named. A few fishermen fished outside the bay for salt-water fish that they disposed of locally, their catch being 17,000 pounds of cultus-cod, 7,000 pounds of halibut, and 48,000 pounds of rockfish, all taken with hand lines. In addition to the above, the fisheries of Coos Bay and River produced 50,000 pounds of salmon that were sold fresh for local use or shipped to San Francisco.

DOUGLAS COUNTY (UMPQUAH RIVER).

The fishing business of Douglas County is confined to the Umpquah River, and the catch consists only of salmon. Numerous other fish, however, come in from the ocean, among which are herring, sardines, smelt, and just outside the mouth of the river are halibut, cultus-cod, flounders, and rockfish. The section is remote from railroad or steamboat lines, and no attention is given to any fish except salmon, the catch of which is utilized at a cannery at Gardner. In 1889 a good run of salmon entered the Umpquah River. The fishermen disposed of their entire catch at the cannery at Gardner, near the mouth of the river, receiving 45 cents each for chinook salmon and 25 cents each for silver salmon. The cannery packed 11,500 cases. From some unknown cause very few salmon entered the river in 1890 or 1891, during which years the cannery remained closed. Only enough fish to supply the local demand were taken, the catch being 20,000 pounds in 1890 and 22,000 pounds in 1891. During 1892 salmon entered the river in great abundance, and the run in September was very heavy. The pack was only limited by the number of cans on hand and could have been doubled with proper facilities. As it was, 12,280 cases were packed. The fishermen received 25 cents each for chinook and 15 cents each for silver salmon, the latter constituting the bulk of the catch. No salmon was salted during the years mentioned.

LANE COUNTY (SIUSLAW RIVER).

The fisheries of Lane County are confined to the Siuslaw River and the catch consists only of salmon for canning purposes. This river is the dividing line between Lane and Douglas counties. One cannery, located at Florence, near the mouth of the river, was in operation in 1889, 1890, 1891, and 1892; one other cannery, 2 miles above, was idle during the first three years mentioned, but was run in 1892. The salmon pack during these years was 11,189 cases in 1889; 4,077 cases in 1890; 2,121 cases in 1891, and 18,290 cases in 1892.

It will be noticed by the amount packed that the run of fish is uncertain. In common with the other rivers of this State, salmon were very abundant during the fall of 1889, but only a few entered the stream in 1890 and 1891. In the fall of 1892 the run was again heavy and the fish were of good size and quality. The catch in 1892 amounted to 6,018 chinook salmon and 103,410 silver salmon, the average gross

weight of the former being 20 pounds, and of the latter 10½ pounds. In addition to the quantity canned in 1892, 34 barrels of chinook and 163 barrels of silver salmon were salted. The salmon are mostly caught with gill nets, only one haul seine being used. The fishermen comprise various nationalities, one-third of them being native-born, one-half Europeans, and twelve Indians. The cannery employees are Chinese, with the exception of a few Indian women.

This stream has no spring run of salmon. The first fish to enter the river are the chinooks, which arrive about the middle of July; most of the run of this species is in the river by the middle of September, a few also being found up to October 1. Silver salmon first enter the river about the time the run of the chinooks is dropping off, or from the first to the middle of September. In 1892 the first silver salmon were taken September 16. A good run at that time was followed the first week in October by a very large body of fish. When the river was visited by the writer on October 5 silver salmon were very abundant.

Large and small sardines are very abundant between June and September, and other varieties of good food-fish are found in the river at certain seasons, and at all times just outside of the river. From its isolated location, with indirect transportation facilities, no attention is paid to any branch of the fisheries except the salmon.

BENTON COUNTY.

This comparatively small county has two rivers whose fisheries are of considerable prominence, namely, the Alseya and the Yaquina. Each of these near its mouth expands into a long, narrow bay, which takes the name of its respective river. Outside the rivers the fisheries are of no importance, although there is an abundance of salt-water fish on the outlying banks in the near vicinity.

Alseya River.—The run of salmon on this stream was quite large in 1889, and 9,000 cases and 50 barrels were packed at the only cannery in operation. Prices of canned salmon ruled low, and on that account and the poor prospects for satisfactory results the cannery was idle during the following year. Fish were scarce in 1890; the cannery was closed, and besides a few salmon taken for local use only 50 barrels were salted and 6,000 pounds shipped fresh to Portland. In 1891 the fish were not abundant, and only 3,500 cases were canned, 50 barrels salted, and 16,000 pounds shipped away fresh. In 1892 a very large run of salmon entered the river for the first time in three years. The canners, not looking for the great increase, were prepared for only a light catch, and were obliged to close down early in the season as soon as all the cans had been filled. At the time the river was visited by the writer, on October 8, 1892, it was full of salmon, but no fishing was carried on. With only a limited number of cans to fill and a large run of fish to draw from, the fish packed consisted almost entirely of chinooks, although, as in the other coast rivers, silver salmon comprised fully three-fourths of the run.

Yaquina River.—Since the closing of the small canneries located on this stream in 1889 the fishing business has greatly decreased. A few barrels of salmon are annually packed for their own use by the ranchers living near by, and about 100,000 pounds are shipped fresh to Portland, Salem, and Albany. In the fall of 1892 one man from Oakland, Cal., was engaged in salting salmon. At the time the river was visited by the writer a few hundred barrels had been salted. The fish are mostly silver salmon, averaging 12 pounds each. The fishermen receive only 8 cents apiece for them.

The shipments of fresh salmon from the Yaquina River to Portland and other places in Oregon are quite large, and during the years 1889–1892 were as follows:

Years.	Pounds.	Value.
1889	208,137	$4,163
1890	118,060	2,361
1891	102,742	2,055
1892	125,000	2,500

The Yaquina is noticeable as being the only river on the Pacific Coast in which any considerable quantities of oysters are found. The oysters are natives, having the small size and peculiar flavor of those taken in Willapa Bay and Puget Sound. The quantity of oysters marketed, prices received, and persons employed in the business, etc., show few changes since the last inquiry, although the oystermen report that at present they can not tong and cull more than 2 or 3 bushels a day as against 5 or 6 bushels in past years. By State law the native oyster beds are apportioned out to citizens desiring to work them. No one is permitted to have over 2 acres. The aggregate acreage is small and the available land is all taken up. Oysters are tonged in water 12 to 15 feet deep at low tide. The tongs have handles 15 to 18 feet long, some being 26 feet long.

The price commanded by the oysters remains about the same from year to year, $2.50 a sack when shipped away, or $3 a sack for local use being the ruling prices. A sack weighs 105 pounds, and is known as 2 bushels, but is somewhat short of that amount.

The oyster output of the Yaquina River from 1889 to 1892, inclusive, was as follows:

Years.	Sacks.	Value.
1889	1,250	$3,125
1890	1,103	2,758
1891	1,217	3,043
1892	1,225	3,062

Crabs enter the river in considerable quantities. They are picked from the salmon nets and are gathered by the oystermen. The catch, which is small, is mostly shipped to Albany, Salem, and Portland.

The yearly shipments have been as follows:

Years.	Pounds.	Value.
1889	6,628	$265
1890	4,200	168
1891	3,521	141
1892	4,125	165

TILLAMOOK COUNTY.

This county has a frontage of over 50 miles on the Pacific Ocean and is traversed by a number of rivers, chief among which are the Siletz, Nestuggah, Tillamook, and Nehalem, the latter forming the boundary between Tillamook and Clatsop counties. The Nestuggah and Tillamook rivers empty into bays of the same name. The fisheries of the county are restricted to the capture of salmon, which enter the rivers in large quantities during the fall months. The relative abundance of chinook salmon in the streams of this county is greater than farther south. Some seasons the catch of chinooks will be fully equal in weight to that of silver salmon; at other times, as in the year 1892, the catch is often three-fourths silver salmon. Both fish run in greatest abundance about the same time, although the chinooks are the first to arrive, during August, while the silver salmon come in September. The movement of both species is over in November, when the fishing operations cease. A few fish continue to enter the river in the winter, in company with very large numbers of steelheads, but no attention is paid to them.

The entire salmon catch of Tillamook River is utilized at a cannery located near the mouth of that stream. The number of cases packed during each of the four years 1889 to 1892 were as follows:

Species.	1889.	1890.	1891.	1892
	Cases.	*Cases.*	*Cases.*	*Cases.*
Chinook salmon	7,000	4,250	4,423	4,000
Silver salmon	3,600	12,000	2,100	14,500
Total	10,600	16,250	6,523	18,500

The Siletz River flows through an Indian reservation and the entire catch is obtained by Indians, who cure the fish for winter use. The annual quantity of salmon thus prepared is about 60,000 pounds.

CLATSOP COUNTY (NEHALEM RIVER).

The fisheries of the ocean side of this county are carried on only in the Nehalem River. Those in the Columbia River will be included in the general remarks on that river which follow. The Nehalem is a small stream rising in the Coast Range, in Clatsop County, and flowing southwesterly to the Pacific, which it enters at the southern end of the county, whose boundary it forms. Its fisheries, which are of some importance, are carried on in the fall, when there is a run of chinook and silver salmon in the river. With the exception of a few salmon

salted, the entire catch is utilized at the cannery located on the river. Fishing is done by 44 Indian, Russian, and Austrian fishermen, using gill nets. The chinooks taken average about 20 pounds in weight, being somewhat lighter than those of the Columbia; the silver salmon average 10 pounds. The abundance of salmon varies a great deal from year to year; in 1891 the fish were very scarce, while in 1892 the run of silver salmon was phenomenally large; chinooks were less numerous in 1891 and 1892 than during the two preceding years. The catch of each kind of salmon during the four years named was as follows, the figures representing the number of fish taken:

Years.	Chinook salmon.	Silver salmon.	Total.
1889	13,093	29,194	42,287
1890	14,445	33,439	47,884
1891	6,174	17,168	23,342
1892	7,000	57,400	64,400

The quantity and value of the salmon packed and salted in the same years are given in the following table:

Years.	Salmon canned.						Salmon salted.		Total value.
	Chinook.		Silver.		Total.				
	Cases.	Value.	Cases.	Value.	Cases.	Value.	Barrels.	Value.	
1889	3,740	$16,830	3,742	$14,968	7,482	$31,798	100	$800	$32,598
1890	4,127	17,539	4,327	15,144	8,454	32,683	105	840	33,523
1891	1,764	7,056	2,024	7,084	3,788	14,140	100	800	14,940
1892	2,000	9,000	8,200	32,800	10,200	41,800	102	816	42,616

THE COLUMBIA RIVER.

The fisheries of this river are more extensive than those of any other stream in the United States, and the canning industry dependent thereon is more important than any other similar business connected with the fisheries. The annual output of fish in the Columbia River is greater than from any other river in the country, and no other stream has in the aggregate yielded such large quantities of fish.

The importance of the fishing industry of this river and the increased attention now being given to its condition warrant and make desirable the consideration of the stream as a unit, regardless of the separate interests of the two States whose boundary it forms and whose fisheries are given in detail, by counties, in the tables elsewhere presented.

Reference is seldom made to the fisheries of Washington and Oregon in which the Columbia is not mentioned, although the fishing industry comprises but one of the many branches of commerce connected with this important stream. In the previous report of this Commission on the fisheries of the west coast, the history and methods of the fisheries of the Columbia were discussed at considerable length. It only remains for this time to record such changes as have taken place in the industry during the past three or four years. In the investigation on which this

report is based it was feasible to visit only that part of the Columbia basin within the States of Washington and Oregon. For hundreds of miles east and northeast of that section, however, salmon and other fish in more or less abundance are found, the catch being mostly utilized by ranchers and Indians living near the stream.

The following counties of Washington and Oregon, bordering on the Columbia River and its tributaries, maintain commercial fisheries, the full extent of which is exhibited in the tables elsewhere presented:

Oregon: Clatsop, Columbia, Multnomah, and Wasco counties.

Washington: Pacific, Wahkiakum, Cowlitz, Clarke, Skamania, and Klickitat counties.

Clatsop and Pacific counties, which are at the mouth of Columbia River, have fishing interests on their ocean sides as well as in the river.

Through the courtesy of the numerous firms engaged in the fishing business of the river, the agent was able to obtain from their well-kept records detailed statistics showing the results of the fishery and canning industry of the river in a more comprehensive, useful, and reliable form than have heretofore been obtained.

THE SALMON INDUSTRY.

This branch of the fisheries completely overshadows all others, and is the only one entitled to mention with the exception of the sturgeon fishery, which is of recent development.

In the early years of the salmon-packing business on the Columbia chinook salmon were extremely abundant, comprising the bulk of the run and all of the pack; other varieties were unutilized. With the beginning of a decrease in the abundance of chinook salmon the small blueback salmon was brought more into notice. When the run of chinooks began to fail some of the packers made cautious experimental packs of small quantities of bluebacks to help out their annual pack, although few were willing to concede the advisability of utilizing any fish except chinooks. The bright red color and fine flavor of the bluebacks at once gave the fish a firm hold on the trade and resulted in an active demand, which has continued to the present time. Singular as it may seem, the utilization of the bluebacks and the increasing quantities consumed annually have been attended by an apparent increase in the abundance of the fish.

The accompanying figures will show that while the blueback is found in the Columbia River every year it has of late had its years of abundance and scarcity, thus resembling in its migrations the humpback salmon of Puget Sound. For the past six or eight seasons the even years have witnessed the larger run of bluebacks. Up to a comparatively recent date the steelhead, which has always occurred abundantly in the Columbia, was considered wholly unsuitable for packing. The same cause, however, which brought the blueback into use has led to the utilization of the steelhead. Recently the demand for canned

salmon in certain sections of the country has called for a cheaper grade of fish, which has brought the neglected steelhead into prominence. The silver salmon, which does not enter the river until most of the canneries are closed, has also been canned in some quantities, and both it and the steelhead have met with a ready sale that has yearly shown tendencies to greatly increase.

Fishermen, prices, etc.—Under the laws of Oregon and Washington all fishermen must be naturalized citizens of the United States. Reference to the previous report on the fisheries of this river will show that in 1888 a very large proportion of the fishermen, especially those employed in the gill-net fishery, were aliens. The law is said to be very fully complied with, and the men now profess to be citizens and voters. They represent many nationalities.

The gill-net fishermen belong chiefly to the Latin races. They are united under the name of the Columbia River Fishermen's Protective Union, with headquarters at Astoria, Oreg. The pound-net fishermen are mostly native-born Americans or Scandinavians. These have combined for mutual protection under the name of the Washington Fishermen's Association, with headquarters at Ilwaco, Pacific County, Wash., near which place most of the pound nets employed in the Columbia River are located. These two associations are to some extent antagonistic. Each legislature usually finds representatives from both associations advocating their claims and portraying their supposed grievances. The object of the association of pound-net fishermen is said to be:

> To promote and foster the fishing industry of the State of Washington; to assist in building and maintaining fish-hatcheries; to induce legislation, by petition or other lawful means, to protect the industry and those engaged in it; to extend to its members aid and assistance, pecuniary or otherwise, when necessary.

By an agreement between the canners and fishermen, the price to be paid for the catch during the ensuing year is usually agreed upon before the beginning of fishing operations. The failure to agree on a price in 1890 resulted in a strike that was disastrous to the fishermen. For several years prior to 1890 the men had been receiving $1 each for chinook salmon, which comprised nearly all of the gill-net catch. The men demanded $1.25 each for their fish, which, being refused, a general strike was begun which lasted throughout the month of April. After losing one month of the short salmon season, the men agreed to the price first offered, but refused to contract at that price for the entire season. One dollar per fish was paid up to June 1, after which the canners would give only 75 cents for chinooks. The most serious outcome of the strike was the attempt of the association fishermen to destroy the nets of a few non-union men. A large body of fishermen belonging to the gill-net association embarked in their boats at Astoria and proceeded several miles up the river, where the nets of the non-union men were set. On beginning their work of destruction, they were met with a volley of rifle balls from the fishermen on the shore,

and the attacking party hastily withdrew to Astoria, leaving several of their number killed and wounded. No further attempt was made to interfere with the non-union fishermen.

The fishing apparatus and methods.—The various appliances employed in the Columbia River for the catching of fish and the manner of operating the same present few changes as compared with the previous investigation. No new method of capture has been devised, although there has been a very marked increase in the number of traps, wheels, nets, etc., operated.

Gill-net fishing is by far the most important branch of the salmon fishery of the Columbia River. More money is invested in the fishery than in any other, and larger quantities of fish are thus taken than by any other means. The number of men interested also outnumbers those employed in all other branches of the salmon fishery. The fishing-grounds covered by the fleet of gill-net boats are mostly near Astoria, extending about 10 miles above that place, and the same distance below. Several hundred boats cruise upstream and as many more descend the river.

The boats are mostly owned by the salmon-packers, but the nets are made and owned by the fishermen. Before the opening of the fishing season the men contract with the canners, who have supplied their boats, for the entire catch during the year. Fishing is done more or less during the entire twenty-four hours. The best hauls, however, are usually made at night, at which time the fish are less able to see and avoid the drifting net.

The boats drift up and down stream with the tide. If the morning finds a fisherman near the cannery at which he has contracted to deliver his catch, he lands his fish there; if he has drifted to the mouth of the river, his fish are delivered on board a receiving scow of the cannery with which he is connected, an agent on board receipting for the fish, which later in the day are collected by a steam tug and taken to the cannery. The work of the night being over and the fish delivered, the fisherman prepares his breakfast and rests during the time intervening between the tides. His boat is sailed to a quiet spot out of the channel, the anchor is dropped, the sail taken in, and his simple meal cooked over a small oil stove. The rudder is then unshipped and stowed up on deck at the stern, the mast is taken down, the sail removed, and the mast is placed lengthwise the boat, one end resting in the bow, the other end on the top of the unshipped rudder, forming a ridgepole for the extemporized tent formed by the sail. Often several hundred boats may be found within a small area, each containing the sleeping fisherman and his assistant.

While chinook salmon constitute the great bulk of the gill-net catch, the quantity of other fish thus taken is considerable and is increasing yearly. With the demand for cheaper grades of salmon the size of the mesh of the gill nets has been reduced.

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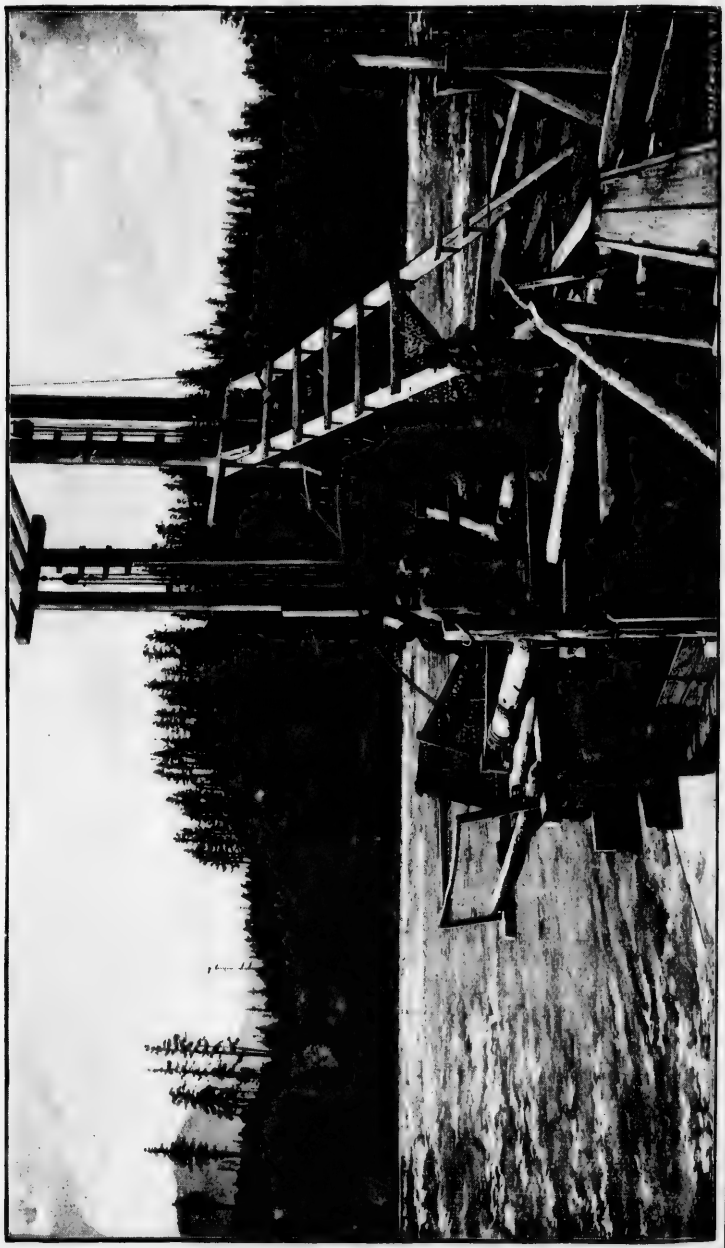


PLATE 6.

Seines are used at Sand Island, near the mouth of the river, and on the sand bars to a distance of 15 to 30 miles above the ocean. These bars as a rule are dry at low tide, at which time the seines are hauled. Up to a comparatively recent time the bars in the Columbia River were owned by the State and their fishing privileges were free. As they became valuable for seine fishing, and had no other use, private parties had them surveyed and bought them from the State at a low price. A title deed having been secured, the value of these bars at once increased from a few dollars to many thousands. The desirable seining-grounds are limited and have fallen into the hands of a few persons, which fact accounts for the relatively small number of seines used, and this form of apparatus is the only one which does not show an increase in recent years.

Fish-wheels are the most interesting form of apparatus used in the Columbia River. Their origin is comparatively recent, and the construction and method of operation are entirely different from any other appliances used for the capture of fish. Owing to their supposed very destructive powers they have been the subject of much antagonism on the part of the general public and the fishermen using other forms of apparatus. Since the first introduction of fish-wheels their number and use have steadily grown, and in 1892 more were employed than at any previous time. As compared with the number of gill nets and pound nets used the number of wheels is very small and has probably nearly reached its limit, as their use is confined to a few desirable places bordering the rapids of the Columbia River at the Cascades and The Dalles, and the favorable sites have passed into the hands of a few persons.

Pound nets are extensively employed in the lower Columbia, the largest number being set in Baker Bay near the mouth of the river. The nets are usually owned by the canners. Between 1889 and 1892 the increase in the number of these nets on the Columbia was 133 per cent. The pound net has almost completely superseded the old wooden trap that dates back to the early days of the salmon business, and has now almost passed out of existence.

The other minor forms of apparatus employed on the river, namely, dip nets, squaw nets, etc., which are mostly used by Indians, present no marked changes in numbers or in methods of use. The Indians continue to take large quantities of fish in this way for their own use and for sale.

Complete tables are elsewhere given showing the number and value of each different kind of apparatus employed in each county on this river and also showing the quantity and value of each kind of fish taken therein. Some general tables follow showing for the Columbia basin as a whole the quantities of apparatus used and the catch in each. The following table has been prepared to show the increase in the number of pound nets, haul seines, fish-wheels, and gill nets owned or used on the Washington and Oregon sides of the river respectively in 1889 to 1892, inclusive.

Apparatus employed on the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus.	Years.	Oregon.	Washington.	Total.	Apparatus.	Years.	Oregon.	Washington.	Total.
		No.	No.	No.			No.	No.	No.
Pound nets	1889	102	62	164	Fish-wheels	1889	31	9	4
	1890	98	70	168		1890	29	12	4
	1891	140	98	238		1891	30	14	4
	1892	247	131	378		1892	40	17	5
Haul seines	1889	7	33	40	Gill nets	1889	757	436	1,19
	1890	6	29	35		1890	760	432	1,19
	1891	19	30	49		1891	790	472	1,26
	1892	12	26	38		1892	861	453	1,31

General statistics of the industry.—In the following tables the exten of the salmon fishery and salmon-canning industry of the Columbi basin for the years 1889 to 1892, inclusive, are given:

Number of persons engaged in the salmon industry of Columbia River from 1889 to 189

How engaged	Oregon.				Washington.				Total.			
	1889.	1890.	1891.	1892.	1889.	1890.	1891.	1892.	1889.	1890.	1891.	189
Fishermen	1,606	1,648	1,929	2,064	1,535	1,510	1,575	1,677	3,141	3,194	3,504	3,74
Shoresmen and cannery employees	870	1,028	1,057	1,100	594	602	654	704	1,464	1,630	1,711	1,80
Total	2,476	2,712	2,986	3,164	2,129	2,112	2,229	2,381	4,605	4,824	5,215	5,54

Number and value of boats and apparatus and the value of shore property and cash capita employed in the salmon industry of the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus and capital.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Oregon:								
Boats	751	$99,850	776	$104,400	876	$120,815	998	$131,5
Pile-drivers and scows	21	5,900	23	6,300	30	8,300	29	7,4
Pound nets	102	72,300	98	76,500	140	98,900	247	173,4
Trap nets	2	1,600	.....	.....	2	1,600	2	1,6
Seines	7	4,600	6	2,700	19	11,150	12	5,8
Gill nets	757	152,000	760	159,450	790	181,265	861	190,1
Wheels	31	120,052	29	107,552	30	108,152	40	132,8
Dip nets and squaw nets	95	475	85	425	60	300	50	2
Shore property	.....	502,955	.....	486,355	.....	455,205	.....	507,7
Cash capital	.....	395,000	.....	581,000	.....	520,000	.....	614,0
Total	.....	1,354,932	.....	1,524,682	.....	1,505,687	.....	1,764,6
Washington:								
Boats	475	60,340	468	59,780	534	67,280	588	64,7
Pile-drivers and scows	39	9,050	37	9,950	42	10,750	45	13,5
Pound nets	62	48,200	70	55,200	98	77,000	131	103,4
Trap nets	2	1,400	2	1,400	2	1,400	1	7
Seines	33	18,700	29	16,400	30	16,900	26	10,0
Gill nets	436	88,775	432	89,480	472	101,780	453	98,1
Wheels	9	25,000	12	48,500	14	45,000	17	49,1
Dip nets and squaw nets	15	75	18	90	23	115	25	1
Shore property	.....	245,950	.....	247,280	.....	321,050	.....	282,5
Cash capital	.....	304,000	.....	331,000	.....	332,000	.....	330,0
Total	.....	801,490	.....	859,080	.....	973,275	.....	952,7
Total for river:								
Boats	1,226	160,190	1,244	164,180	1,410	188,095	1,586	196,4
Pile-drivers and scows	60	14,950	60	16,250	72	19,050	74	20,9
Pound nets	164	120,500	168	131,700	238	175,900	378	276,8
Trap nets	4	3,000	2	1,400	4	3,000	3	2,3
Seines	40	23,300	35	19,100	49	28,050	38	15,9
Gill nets	1,193	240,775	1,192	248,930	1,262	283,045	1,314	288,5
Wheels	40	145,052	41	156,052	44	153,152	57	181,9
Dip nets and squaw nets	110	550	103	515	83	415	75	3
Shore property	.....	748,905	.....	733,635	.....	776,255	.....	790,0
Cash capital	.....	699,000	.....	912,000	.....	852,000	.....	944,0
Total	.....	2,156,422	.....	2,383,762	.....	2,478,962	.....	2,717,3

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1889.									
Pound nets:									
Chinook	86,777	2,169,425	$108,469	40,323	1,008,075	$50,353	127,100	3,177,500	$158,822
Blueback	33,372	166,860	8,342	24,199	120,995	5,904	57,571	287,855	14,246
Steelhead	37,958	379,545	11,386	22,460	224,600	6,737	60,418	604,145	18,123
Total	158,107	2,715,830	128,197	86,982	1,353,670	62,994	245,089	4,069,500	191,191
Trap nets:									
Chinook	710	17,750	887	2,275	56,875	2,844	2,985	74,625	3,731
Steelhead	440	4,400	132	803	8,030	241	1,243	12,430	373
Total	1,150	22,150	1,019	3,078	64,905	3,085	4,228	87,055	4,104
Seines:									
Chinook	24,752	618,800	30,940	63,782	1,594,550	79,727	88,534	2,213,350	110,667
Blueback	3,500	17,500	875	2,444	12,225	611	5,944	29,725	1,486
Steelhead	16,720	167,200	4,816	43,978	439,780	13,193	60,698	606,980	18,009
Total	44,972	803,500	36,631	110,204	2,046,555	93,531	155,176	2,850,055	130,162
Gill nets:									
Chinook	252,044	6,301,325	312,563	226,053	5,759,050	281,470	478,097	12,060,375	594,033
Blueback	27,623	139,115	4,751	17,218	86,090	3,044	44,841	225,205	7,795
Steelhead	16,472	164,720	5,090	15,970	159,700	4,785	32,442	324,420	9,875
Total	296,139	6,605,160	322,404	259,241	6,004,840	289,299	555,380	12,610,000	611,703
Wheels:									
Chinook	15,182	379,550	12,867	6,876	171,900	6,978	22,058	551,450	19,845
Blueback	140,090	700,450	23,000	51,064	230,322	9,260	191,154	930,772	32,350
Steelhead	6,329	63,290	2,043	1,480	14,800	484	7,809	78,090	2,527
Silver	4,500	31,500	630	2,540	16,780	503	7,040	48,280	1,133
Total	166,101	1,174,790	38,630	61,960	433,802	17,225	228,061	1,608,592	55,855
Dip nets and squaw nets:									
Chinook	2,291	57,283	1,146	1,360	34,000	510	3,651	91,283	1,656
Blueback	16,910	84,550	1,841	8,112	40,560	608	25,022	125,110	2,449
Steelhead	1,145	11,450	229	509	5,090	77	1,654	16,540	306
Silver	5,142	35,994	540	3,175	22,225	333	8,317	58,219	873
Total	25,488	189,277	3,756	13,156	101,875	1,528	38,644	291,152	5,284
All apparatus:									
Chinook	381,756	9,544,133	466,872	340,669	8,624,450	421,882	722,425	18,168,583	888,754
Blueback	221,495	1,108,475	38,899	103,037	490,192	19,427	324,532	1,598,667	58,326
Steelhead	79,064	790,605	23,696	85,200	852,000	25,517	164,264	1,642,605	49,213
Silver	9,642	67,494	1,170	5,715	39,005	836	15,357	106,499	2,006
Total	691,957	11,510,707	530,637	534,621	10,005,647	467,662	1,226,578	21,516,354	998,299
1890.									
Pound nets:									
Chinook	104,099	2,602,475	78,491	71,346	1,783,659	53,510	175,445	4,386,125	132,001
Blueback	50,493	252,465	5,048	42,097	210,485	4,209	92,590	462,950	9,257
Steelhead	51,600	516,000	5,160	41,412	414,120	4,140	93,012	930,120	9,300
Total	206,192	3,370,940	88,699	154,855	2,408,255	61,859	361,047	5,779,195	150,558
Trap nets:									
Chinook	.....	.....	.....	3,629	90,725	2,721	3,629	90,725	2,721
Blueback	.....	.....	.....	303	1,515	30	303	1,515	30
Steelhead	.....	.....	.....	2,979	29,790	298	2,979	29,790	298
Total	.....	.....	.....	6,911	122,030	3,049	6,911	122,030	3,049
Seines:									
Chinook	10,750	268,750	8,063	53,752	1,[illegible],800	41,402	64,502	1,612,550	49,465
Blueback	2,250	11,250	225	14,292	71,460	1,425	16,542	82,710	1,650
Steelhead	9,013	90,130	901	36,701	367,010	3,669	45,714	457,140	4,570
Total	22,013	370,130	9,189	104,743	1,782,270	46,496	126,758	2,152,400	55,685
Gill nets:									
Chinook	369,196	9,229,700	288,730	211,675	5,366,675	166,167	580,871	14,596,375	454,897
Blueback	81,909	409,545	8,440	25,718	138,590	2,884	107,627	548,135	11,324
Steelhead	29,593	295,935	3,819	18,635	186,350	2,467	48,228	482,285	6,286
Total	480,698	9,935,180	300,989	256,028	5,691,615	171,518	736,726	15,626,795	472,507

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1890.									
Wheels:									
Chinook	83,202	2,080,053	$62,401	27,972	699,317	$20,979	111,174	2,779,370	$83,380
Blueback	529,646	2,648,155	79,444	207,298	1,036,465	30,431	736,944	3,684,620	109,875
Steelhead	71,239	712,390	16,474	13,801	138,010	2,322	85,040	850,400	18,796
Silver	4,660	31,612	749	1,500	10,500	210	6,160	42,112	959
Total	688,747	5,472,210	159,068	250,571	1,884,292	53,942	939,318	7,356,502	213,010
Dip nets and squaw nets:									
Chinook	5,021	125,534	1,958	2,242	56,068	841	7,263	181,602	2,799
Blueback	32,748	163,740	2,450	7,717	38,585	579	40,465	202,325	3,029
Steelhead	11,000	110,000	1,650	1,402	14,025	210	12,402	124,025	1,860
Silver	10,180	71,260	1,068	4,500	31,500	472	14,680	102,760	1,540
Total	58,949	470,534	7,126	15,861	140,178	2,102	74,810	610,712	9,228
All apparatus:									
Chinook	572,268	14,306,512	439,643	370,616	9,340,235	285,620	942,884	23,646,747	725,263
Blueback	697,046	3,485,155	95,607	297,425	1,497,100	39,558	994,471	4,982,255	135,165
Steelhead	172,445	1,724,455	28,004	114,930	1,149,305	13,106	287,375	2,873,760	41,110
Silver	14,840	102,872	1,817	6,000	42,000	682	20,840	144,872	2,499
Total	1,456,599	19,618,994	565,071	788,971	12,028,640	338,966	2,245,570	31,647,634	904,037
1891.									
Pound nets:									
Chinook	108,983	2,724,575	108,983	94,624	2,365,600	94,594	203,607	5,090,175	203,577
Blueback	22,988	114,940	2,298	52,164	260,840	5,336	75,152	375,780	7,634
Steelhead	54,080	540,800	7,029	44,448	444,464	6,308	98,528	985,264	13,337
Total	186,051	3,380,315	118,310	191,236	3,070,904	106,238	377,287	6,451,219	224,548
Trap nets:									
Chinook	630	15,750	630	712	17,800	712	1,342	33,550	1,342
Blueback	148	740	15	.....	.....	.....	148	740	15
Steelhead	786	7,860	118	501	5,010	75	1,287	12,870	193
Total	1,564	24,350	763	1,213	22,810	787	2,777	47,160	1,550
Seines:									
Chinook	16,489	412,225	16,489	48,596	1,214,900	36,884	65,085	1,627,125	53,373
Blueback	2,252	11,260	225	8,325	41,625	1,221	10,577	52,885	1,446
Steelhead	5,092	50,920	919	27,469	274,690	5,467	32,561	325,610	6,386
Silver	857	5,999	190	.....	.....	.....	857	5,999	190
Total	24,690	480,404	17,823	84,390	1,531,215	43,572	109,080	2,011,619	61,395
Gill nets:									
Chinook	448,500	11,212,500	447,031	208,633	5,341,525	208,593	657,133	16,554,025	655,624
Blueback	25,679	131,395	4,102	15,268	76,340	2,589	40,947	207,735	6,691
Steelhead	17,274	172,740	3,541	20,581	205,815	3,468	37,855	378,555	7,009
Silver	285	1,995	60	694	4,858	145	979	6,853	205
Total	491,738	11,518,630	454,734	245,176	5,628,538	214,795	736,914	17,147,168	669,529
Wheels:									
Chinook	23,845	591,153	17,735	9,621	240,540	7,216	33,266	831,693	24,951
Blueback	80,004	400,020	12,000	36,675	183,375	5,502	116,679	583,395	17,502
Steelhead	27,053	270,530	6,675	11,536	115,360	3,460	38,589	385,890	10,143
Silver	4,920	34,440	933	2,730	19,110	573	7,650	53,550	1,506
Total	135,622	1,296,143	37,343	60,562	558,385	16,751	196,184	1,854,528	54,094
Dip nets and squaw nets:									
Chinook	2,943	73,591	1,119	403	10,083	151	3,346	83,674	1,270
Blueback	30,436	152,182	2,388	13,887	60,918	914	44,323	213,100	3,302
Steelhead	7,459	74,590	1,149	2,016	20,164	302	9,475	94,754	1,451
Silver	10,370	72,591	1,089	4,260	29,820	447	14,630	102,411	1,536
Total	51,208	372,954	5,745	20,566	120,985	1,814	71,774	493,939	7,559
All apparatus:									
Chinook	601,190	15,029,794	591,987	362,589	9,190,448	348,150	963,779	24,220,242	940,139
Blueback	161,507	810,537	21,028	126,319	623,098	15,562	287,826	1,433,635	36,590
Steelhead	111,744	1,117,440	19,431	106,551	1,065,503	19,080	218,295	2,182,943	38,511
Silver	16,432	115,025	2,272	7,684	53,788	1,165	24,116	168,813	3,437
Total	890,873	17,072,796	634,718	603,143	10,932,837	383,957	1,494,016	28,005,633	1,018,677

Table showing by apparatus the number, weight, and value of each species of salmon taken in the Columbia River in 1889, 1890, 1891, and 1892—Continued.

Apparatus and species.	Oregon.			Washington.			Total.		
	No.	Lbs.	Value.	No.	Lbs.	Value.	No.	Lbs.	Value.
1892.									
Pound nets:									
Chinook	127,627	3,191,675	$127,627	89,852	2,246,300	$89,852	217,479	5,537,975	$217,479
Blueback	99,602	498,010	10,010	191,222	956,110	19,122	290,824	1,454,120	29,132
Steelhead	112,661	1,126,610	16,899	76,998	769,980	11,549	189,659	1,896,590	28,448
Total	339,890	4,816,295	154,536	358,072	3,972,390	120,523	697,962	8,788,685	275,059
Trap nets:									
Chinook	530	13,250	530	20	500	20	550	13,750	550
Blueback	240	1,200	24				240	1,200	24
Steelhead	879	8,790	132	150	1,500	150	1,029	10,290	282
Total	1,649	23,240	686	170	2,000	170	1,819	25,240	856
Seines:									
Chinook	27,707	689,535	20,686	27,582	689,550	20,687	55,289	1,379,085	41,373
Blueback	48,347	237,735	7,132	75,031	375,185	11,256	123,378	612,920	18,388
Steelhead	18,544	185,352	3,707	34,843	348,430	6,969	53,387	533,782	10,676
Silver	1,428	10,000	300				1,428	10,000	300
Total	96,026	1,122,622	31,825	137,456	1,413,165	38,912	233,482	2,535,787	70,737
Gill nets:									
Chinook	355,715	8,892,870	355,715	223,197	5,715,675	223,167	578,912	14,608,545	578,882
Blueback	94,141	407,705	9,714	21,021	110,105	3,303	115,162	580,810	13,017
Steelhead	37,043	370,430	5,866	33,428	334,280	5,090	70,471	704,710	10,956
Silver				714	5,000	150	714	5,000	150
Total	486,899	9,734,005	371,295	278,360	6,165,060	231,710	765,259	15,899,065	603,005
Wheels:									
Chinook	45,964	1,149,115	34,474	16,705	417,630	12,529	62,669	1,566,745	47,003
Blueback	314,585	1,572,923	47,187	145,766	728,832	21,865	460,351	2,301,755	69,052
Steelhead	95,654	956,540	28,696	45,056	450,560	13,517	140,710	1,407,100	42,213
Silver	39,255	274,785	8,234	4,872	34,104	1,023	44,127	308,889	9,257
Total	495,458	3,953,363	118,591	212,399	1,631,126	48,934	707,857	5,584,489	167,525
Dip nets and squaw nets:									
Chinook	1,356	33,900	509	578	14,450	217	1,934	48,350	7[illegible]
Blueback	59,023	295,109	4,427	15,380	76,900	1,154	74,403	372,009	5,5[illegible]
Steelhead	6,780	67,802	1,017	2,890	28,900	434	9,670	96,702	1,451
Silver	12,386	86,703	1,301	4,850	33,950	510	17,236	120,653	1,811
Total	79,545	483,514	7,254	23,698	154,200	2,315	103,243	637,714	9,569
All apparatus:									
Chinook	558,899	13,970,345	539,541	357,934	9,084,105	346,472	916,833	23,054,450	886,013
Blueback	615,938	3,075,682	78,494	448,420	2,247,132	56,700	1,064,358	5,322,814	135,194
Steelhead	271,561	2,715,524	56,317	193,365	1,933,650	37,709	464,926	4,649,174	94,026
Silver	53,069	371,488	9,835	10,436	73,054	1,083	63,505	444,542	11,518
Total	1,499,467	20,133,039	684,187	1,010,155	13,337,941	442,564	2,509,622	33,470,980	1,126,751

Number and location of the salmon canneries operated on the Columbia River, 1889–92.

Location.	1889.	1890.	1891.	1892.	Location.	1889.	1890.	1891.	1892.
Oregon:					Washington:				
Astoria	8	8	8	8	Ilwaco	1	1	1	1
Clifton	1		1	1	Knappton			1	1
Maple Dell	1	1	1	1	Chinook	1	1	1	1
Warrendale	1	1	1	1	Pillar Rock	1	1	1	1
Dalles	1	1	1	1	Brookfield	1	1	1	1
Celilo		1		1	Waterford	1	1	1	1
Portland[a]				1	Eureka	1	1	1	1
					Cathlamet	1	1	1	1
Total	12	12	12	14	Bay View	1	1	1	1
					Eagle Cliff	1	1	1	1
					Total	9	9	10	10
					Grand total	21	21	22	24

[a] This cannery, on the Willamette River, received its fish from the Columbia River.

Table showing by species the salmon pack of the Columbia River from 1889 to 1892.

States and species.	1889.		1890.		1891.		1892.	
	Cases.	Value.	Cases.	Value.	Cases.	Value.	Cases.	Value.
Oregon:								
Chinook	140,741	$844,446	196,414	$1,138,787	222,863	$1,279,092	214,631	$1,244,500
Blueback	15,979	99,628	53,351	268,104	10,859	58,816	51,106	287,984
Steelhead	11,692	40,899	26,608	106,432	15,584	62,296	45,403	181,612
Silver							4,176	20,880
Total	168,412	984,973	276,373	1,513,323	249,406	1,400,144	315,316	1,734,976
Washington:								
Chinook	125,956	755,736	139,190	807,300	130,944	759,474	129,636	751,888
Blueback	1,818	10,423	3,994	21,965	4,623	25,426	15,441	84,925
Steelhead	13,699	58,688	16,217	64,868	13,980	55,920	26,945	107,780
Silver								
Total	141,473	824,847	159,401	894,133	149,547	840,820	172,022	944,093
Total for river:								
Chinook	266,697	1,600,182	335,604	1,946,087	353,807	2,038,566	344,267	1,996,388
Blueback	17,797	101,051	57,345	290,069	15,482	84,242	66,547	372,909
Steelhead	25,391	108,587	42,825	171,300	29,564	118,156	72,348	288,892
Silver							4,176	20,880
Total	309,885	1,809,820	435,774	2,407,456	398,953	2,240,964	487,338	2,679,069

In 1893 the pack of chinook salmon amounted to 290,000 cases.

Table showing by months the number and weight of each species of salmon canning purposes on the Columbia River in 1889, 1890, 1891, and 1892.

Years and months.	Chinook.		Blueback.		Steelhead.		Silver.		Total.	
	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.	No. of fish.	Gross weight.
1889.		Pounds.		Pounds.		Pounds.		Pounds.		Pounds
April	89,266	2,231,650	36,676	183,380	9,408	94,080	.....	.....	135,350	2,509,110
May	156,117	3,902,925	76,517	382,585	14,709	147,090	.....	.....	247,343	4,432,600
June	168,959	4,223,975	82,453	412,265	62,695	626,950	.....	.....	314,107	5,263,190
July	301,254	7,535,350	36,717	183,585	76,166	761,660	.....	.....	414,137	8,480,595
Total	715,596	17,893,900	232,363	1,161,815	162,978	1,629,780	.....	.....	1,110,937	20,685,495
1890.										
April	32,727	818,175	63,180	315,900	11,005	110,050	.....	.....	106,912	1,244,125
May	236,776	5,919,400	202,580	1,012,900	22,983	229,830	.....	.....	462,339	7,162,130
June	252,754	6,318,850	297,234	1,486,170	87,567	875,670	.....	.....	637,555	8,680,690
July	357,183	8,932,575	150,299	751,495	139,596	1,395,960	.....	.....	647,078	11,080,030
August	13,941	348,525	22,107	110,535	15,535	155,350	.....	.....	51,583	614,410
Total	893,381	22,337,525	735,400	3,677,000	276,686	2,766,860	.....	.....	1,905,467	28,781,385
1891.										
April	82,413	2,060,325	17,437	87,185	5,178	51,780	.....	.....	105,028	2,199,290
May	184,090	4,502,250	55,229	276,145	13,314	133,140	.....	.....	252,633	4,911,535
June	223,964	5,599,100	83,743	418,715	52,676	526,760	.....	.....	360,383	6,544,575
July	398,247	9,956,175	32,389	161,945	97,900	979,000	.....	.....	528,536	11,097,120
August	58,670	1,466,750	3,701	18,505	21,286	212,860	.....	.....	83,657	1,698,115
Total	947,384	23,584,600	192,499	962,495	190,354	1,903,540	.....	.....	1,330,237	26,450,635
1892.										
April	53,021	1,375,525	86,449	432,245	10,503	105,030	.....	.....	151,973	1,912,800
May	187,492	4,687,300	308,946	1,544,730	32,795	327,950	.....	.....	529,233	6,559,980
June	239,498	5,987,450	330,558	1,652,790	141,194	1,411,940	.....	.....	711,250	9,052,180
July	343,421	8,585,525	128,043	640,215	199,333	1,993,330	.....	.....	670,797	11,219,070
August	84,124	2,103,100	19,110	95,550	52,991	529,910	.....	.....	156,225	2,728,560
September	.....	.....	.....	.....	11,293	112,930	19,489	136,423	30,782	249,353
October	.....	.....	.....	.....	22,629	226,290	33,966	237,762	56,595	464,052
Total	909,556	22,738,900	873,106	4,365,530	470,738	4,707,380	53,455	374,185	2,306,855	32,185,995

Scarcely any attention is given to the refuse at the salmon canneries. On the Columbia River this waste yearly averages over 7,000,000 pounds, or 3,500 tons, nearly all of which is emptied into the river. The only efforts to save and utilize this valuable waste product are at Astoria, and there but a small part of the refuse is collected, as will be seen by the following statement of the oil and fertilizer prepared from salmon waste at a small factory:

Years.	Oil.		Scrap.	
	Gallons.	Value.	Tons.	Value.
1889	15,000	$3,600	.....	.....
1890	12,000	2,880	25	$500
1891	26,000	6,240	35	700
1892	30,000	6,750	40	800

Summary of the salmon industry.—From 1866, the year in which salmon canning began on the Columbia River, to 1893, inclusive, the gross weight of the salmon utilized for canning was over 658,000,000 pounds, and the value of the pack was over $59,000,000. The annual results of this industry are shown in the following table:

Summary of salmon-canning industry of the Columbia River from 1866 to 1893.

Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.	Year.	Gross weight of salmon utilized.	No. of cases packed.	Value.	Average value per case.
	Pounds.					*Pounds.*			
1866	260,000	4,000	$64,000	$16.00	1881	35,750,000	550,000	$2,475,000	$4.50
1867	1,170,000	18,000	288,000	16.00	1882	35,184,500	541,300	2,600,000	4.80
1868	1,820,000	28,000	392,000	14.00	1883	40,911,000	629,400	3,147,000	5.00
1869	6,500,000	100,000	1,350,000	13.50	1884	40,300,000	620,000	2,915,000	4.70
1870	9,750,000	150,000	1,800,000	12.00	1885	35,997,000	553,800	2,500,000	4.51
1871	13,000,000	200,000	2,100,000	10.50	1886	29,152,000	448,500	2,135,000	4.76
1872	16,250,000	250,000	2,325,000	9.30	1887	23,140,000	356,000	2,124,000	5.97
1873	16,250,000	250,000	2,250,000	9.00	1888	24,211,005	372,477	2,327,981	6.25
1874	22,750,000	350,000	2,625,000	7.50	1889	20,685,495	309,885	1,809,820	5.84
1875	24,375,000	375,000	2,250,000	6.00	1890	28,781,385	435,774	2,407,456	5.52
1876	29,250,000	450,000	2,475,000	5.50	1891	26,450,635	398,953	2,240,964	5.62
1877	24,700,000	380,000	2,052,000	5.40	1892	32,185,995	487,338	2,679,069	5.50
1878	29,900,000	460,000	2,300,000	5.00	1893	24,050,000	370,000	2,107,500	5.70
1879	31,200,000	480,000	2,640,000	5.50					
1880	34,450,000	530,000	2,650,000	5.00	Total	658,424,515	10,098,427	59,029,790	5.85

In addition to the salmon used for canning, very large quantities have been salted, consumed fresh locally, or shipped fresh to other parts of the country. The fish thus utilized have aggregated about 192,000,000 pounds, giving 850,000,000 pounds as the total salmon output of the Columbia River since 1866, the value of which, as sold fresh, canned, or salted, was $66,000,000. As a matter of interest it may be stated that if the total salmon catch of the Columbia River could be loaded into railroad cars, 42,500 ordinary freight cars would be required to contain the fish, which would make a solid train over 280 miles long.

Exportations of canned salmon from Astoria.—Queries are often made as to where the enormous quantities of salmon prepared in the lower Columbia River and elsewhere on the Pacific Coast are sold. In the early days of the canning industry, and for several years after, nearly

the entire product was sold in foreign countries, and there is still a large export trade with England, Australia, and other countries. Reference is made to the table of exports from San Francisco for a statement of the destination of the canned salmon sent from that port. Much the largest part of the canned salmon exported from Astoria is consigned to England. The shipments are made exclusively in sailing vessels, which clear from Astoria deeply laden with no other merchandise than canned salmon.

The following is a statement of the shipment by months from 1887 to September, 1892, inclusive:

Year and month.	Destination.	Cases.	Net weight of fish.	Value.
			Pounds.	
1887—July	England	41,582	1,995,936	$218,285
August	do	78,750	3,780,000	466,631
1888—August	do	61,226	2,938,848	436,824
September	do	12,869	617,712	90,856
1889—May	do	8,650	415,200	59,785
July	do	23,475	1,126,800	161,125
August	do	74,011	3,553,488	501,858
September	do	20,334	976,032	124,824
November	do	8,124	389,952	44,864
1890—March	do	7,000	336,000	35,000
November	do	20,701	993,642	102,265
1891—May	do	700	33,600	4,200
June	do	1,200	57,600	7,450
July	do	47,015	2,256,720	217,997
August	do	35,263	1,692,624	183,724
1892—February	Chile	3,000	144,000	1,140
March	do	500	24,000	2,200
June	England	300	16,800	2,450
August	do	27,107	1,320,336	160,651
September	do	46,972	2,254,656	264,518

THE STURGEON FISHERY.

For many years the fishermen of the Columbia River gave scarcely any attention to any fish caught in their nets except salmon. Sturgeon were very plentiful and were caught incidentally in the salmon nets in considerable quantities. A few were saved and sent to the Portland market, and during the winter months some were also shipped by steamer in a round or undressed state to San Francisco, but as a rule the sturgeon was looked upon as a nuisance and in most cases was knocked in the head and set adrift in the river. This practice prevailed up to a comparatively recent date.

In 1888 an eastern firm established experimental fishing-camps at several points on the river with a view to determine the abundance and location of the sturgeon, and, by shipping a few carloads of frozen sturgeon, to demonstrate the feasibility of creating a market in the East. The undertaking proved a success from the outset, and the industry soon attracted other firms from the East, so that in 1892 there were four firms interested in the business. The catch increased from 960,705 pounds in 1889 to 3,006,757 pounds in 1892. The fishery has been of great importance to the fishermen in that it does not interfere in any way with their regular salmon operations, but is prosecuted after the close of the salmon season, and in 1892 added over $41,000 to their income.

The sturgeon fishery begins immediately at the close of the salmon fishery; that is, about the middle of August or the first of September, and is followed to the opening of the salmon season in the following April. Sturgeon are found in the river throughout the year, but are most abundant during the run of sardines, in July and August, and the run of smelt in January and February, the sturgeon feeding to a considerable extent on these fish. The spawning season appears to be in November and later, thus contrasting strongly with the sturgeon of the Atlantic Coast. Mature roe, suitable for the preparation of caviar, is not found in quantities before November. With the exception of the sturgeon taken incidentally in the salmon nets, which are sold for local use, the fish is neglected during the summer months.

The average gross weight of the sturgeon caught is 150 pounds, the market fish ranging from 40 to 500 pounds. Some fish of relatively small size are caught, and occasionally very large ones are taken. In 1891 a sturgeon taken near Kalama weighed 848 pounds, and one taken off Oak Point in 1892 weighed 800 pounds.

Fishing is prosecuted from the mouth of the river as far up as the Cascades, a few fish being taken above the latter point; but the bulk of the catch is obtained between Astoria and Kalama, a distance of 40 miles. During the early part of the season fishing is done nearer the mouth of the river. The fishermen meet the fish as they come into the stream and move along with them.

With the exception of a few gill nets employed in the lower river the fishing is carried on exclusively with set lines. Each line is provided with 200 to 400 hooks, the hooks being 1 foot apart, and 5 to 8 lines constituting the complement of each fishing boat. When the fishing was first inaugurated lampreys were used for bait, but in the following year the Chinese method of using baitless hooks was found successful and has since been universally practiced. The hooks differ from those used by the Chinese, however, in being barbed, but resemble them in being ground to a needle-like point. The lines, as a rule, are anchored across the bed of the river, in some cases diagonally, and also in the bays formed by the expansion of the river. At intervals of 7 feet a junk bottle or block of wood is fastened to the line to buoy it up and maintain it in position about 4 inches from the bottom. The fishermen closely study the movements and habits of the sturgeon and set their lines on the grounds most frequented. The fish swimming along the bottom of the stream in search of food, as is their habit, must necessarily cross the set lines, and are almost certain to be snagged by one or more of the sharp-pointed hooks. In attempting to free themselves more hooks are apt to be caught in their body and they are held fast. Occasionally fish are taken showing healed-up scars, evidence of previous capture and escape. The lines are tended on the slack tide and are usually visited only once in twenty-four hours.

In 1892 the business of buying, packing, and shipping sturgeon was carried on by two firms located at Portland, Oreg., one at Kal-

ama, Wash., and one at Ranier, Oreg. There were also numerous receiving stations located near the fishing-grounds. If, after tending his lines, the fisherman is near the head station or packing house, he delivers his catch there; but if some distance away he takes it to the nearest receiving station of the firm with which he has contracted to furnish his catch. The prices received by the fishermen are 1 cent per pound as the fish come from the water, or 1½ cents per pound if the viscera have been removed. When the fish contain roe suitable for the manufacture of caviar, the fishermen remove it and receive 4 cents per pound for the same. As soon as the fish are landed at the packing-house a gang of employees dress them for market. In some cases the skin is removed, in others it is left intact. After dressing, the fish are cut into sizes to fit the freezing-pans, which are then placed in bins, covered with ice and salt, and frozen into solid cakes. After freezing, the blocks of sturgeon are removed from the pans and placed in boxes holding from 200 to 250 pounds, which are loaded into refrigerator cars and shipped to market. Most of the catch has been sent to Sandusky, Ohio, Chicago, Ill., and New York City, where it is smoked and finds a ready sale at good prices. The number of car loads of fresh sturgeon sent east was 25 in 1889, 77 in 1890, 102 in 1891, and 115 in 1892.

One product of the sturgeon is used entirely by the Chinese, namely, the spinal marrow. As soon as the fish are landed at the packing establishment a Chinaman, armed with a hook, pulls out enough of the marrow to furnish a good hold, then seizing it, draws the remainder of it out hand over hand. In the average-sized sturgeon the spinal cord is 4 or 5 feet long and consists of long, white connecting links resembling sausages. These are cut open and the jelly-like substance contained within is scraped off and thrown away. This marrow is known by the Chinese and the trade under the name of "bone." It is thoroughly dried, and if not sold to the Chinese in this country it is exported to China, where it is much prized for making soups. The Chinamen pay 4 cents a pound for this "bone" and remove it from the fish themselves.

Valuable as the sturgeon is, there seems to be a large waste that might be utilized for fertilizing purposes. Nearly half the gross weight of the fish is at present thrown away, the head, viscera, and skin being discarded. This refuse contains more or less oil and valuable fertilizing properties, and could, no doubt, be utilized to great advantage.

The sturgeon fishery of this river was investigated for the United States Fish Commission by the writer in 1889 and again in 1892, the various fishing camps and grounds and packing stations being visited each year, and the firms engaged in the business courteously furnished the desired statistical and general information. Up to the date of the last visit sturgeon had been found in ample abundance for the demands of the firms, but the fishermen were beginning to complain of a growing scarcity. As is usual in such cases, more apparatus was required, and this had to be moved from point to point more frequently in order

to keep up the catch. Advices received from this river in 1893 reported a great scarcity of sturgeon, which was followed in 1894 by a still more marked decrease in the abundance of the fish, so that the persons interested were obliged to discontinue the business, and some moved their plants to Grays Harbor, Wash., and Fraser River, British Columbia. The absence of any protective laws or a close season during the spawning period, together with the avidity with which the fishing was prosecuted, have doubtless led to this destruction of a once valuable fishery. The failure of the States to take proper action for the preservation of the sturgeon has no doubt been due to the recent date at which the fishery was established and to the absence of accurate knowledge as to its destructive tendency. The extreme brevity of the existence of this fishery is very suggestive, although in keeping with other rivers of the Eastern States in which the sturgeon fishery has been entirely abandoned.

The extent of the sturgeon fishery of the Columbia River during the four years, 1889 to 1892, is shown in the following tables, relating to persons employed, apparatus, boats, etc., used, and quantity and value of products.

Persons employed in the sturgeon fishery of the Columbia River.

Years.	Fishermen.	Shore employees.	Total.
1889	135	20	155
1890	183	29	212
1891	202	35	237
1892	287	53	340

Boats, apparatus, and other property employed in the sturgeon fishery of the Columbia River.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Boats	90	$2,250	122	$3,050	135	$3,375	200	$8,690
Set lines	630	6,300	854	8,540	945	9,450	1,322	13,220
Gill nets	15	1,500	15	1,500	15	1,500	15	1,500
Shore property	.....	17,200	.....	23,500	.....	24,500	.....	27,000
Cash capital	.....	8,900	.....	14,000	.....	21,000	.....	40,000
Total	.....	36,150	.....	50,590	.....	59,825	.....	90,410

Products of the sturgeon fishery of the Columbia River.

Products.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Flesh	921,945	$10,094	1,627,434	$17,275	1,868,902	$20,447	2,915,428	$30,904
Roe	21,275	851	36,650	1,346	47,680	1,907	47,260	1,890
Marrow	15,500	1,395	33,300	2,331	39,400	1,970	56,020	2,241
Sounds	1,195	2,902	2,325	3,487	3,117	4,676	4,405	6,758
Total	960,705	15,242	1,696,709	24,439	1,959,099	29,000	3,006,757	41,743

THE FISH TRADE OF PORTLAND, OREGON.

The fish business of Portland is of considerable extent and is one of the most important branches of trade. In the wholesale trade, fresh, pickled, and canned salmon, and fresh sturgeon are handled in large quantities, the fresh fish being shipped in refrigerator cars to points east of the Missouri River. One salmon cannery is located within the city limits, and several others on the Columbia River and in other places are owned by persons having their business headquarters at Portland.

A good variety of fresh-water and salt-water fish may be found in the markets of the city at almost any time in the year. German carp, shad, and catfish, which were only recently introduced into that part of the country, have wonderfully increased and are found constantly in the markets. Their abundance is such that at times it is difficult to sell them at any price. Salmon is the favorite fish and is usually sold at a very reasonable price. Any recent decrease in the quantities of carp, shad, and catfish consumed in Portland may be attributed to the increased use of salmon. Carp and catfish are plentiful around the city docks and are also very abundant in the several streams adjacent to Portland.

The salt-water fish entering into the fresh-fish trade of Portland come largely from Puget Sound. Native oysters are brought from Willapa Bay and the Yaquina River in sacks holding about 100 pounds each. Crawfish are common and come from the sloughs of the Willamette River, a few miles from the city. The crabs and clams which are consumed locally are received from Willapa Bay and the mouth of the Columbia River.

In the following table the extent of the fresh-fish trade of Portland in the years 1889 to 1892 is shown. The values given represent the prices paid by the dealers to the fishermen.

Fresh-fish trade of Portland, Oregon.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Cultus-cod	20,109	$1,005	22,320	$1,116	28,260	$1,413	30,119	$1,506
Flounders	60,117	1,804	65,220	1,957	70,360	2,111	75,108	2,253
Halibut	55,000	2,750	61,108	3,055	75,320	3,766	122,500	6,125
Herring	55,214	1,656	60,512	1,815	64,670	1,940	71,870	2,156
Perch	90,212	2,706	95,317	2,860	98,230	2,947	110,160	3,305
Salmon	830,105	32,050	920,222	36,800	960,115	38,400	1,004,320	30,130
Shad	10,145	507	20,360	1,018	31,125	1,556	45,840	2,292
Smelt	198,460	4,962	101,115	2,528	149,870	3,746	300,422	7,511
Trout	13,319	1,998	14,270	2,140	16,180	2,427	19,430	2,914
Other fish	8,328	833	29,958	2,387	63,694	2,634	103,470	4,552
Clams	50,115	1,250	60,340	1,500	70,530	1,763	80,240	2,006
Oysters	200,000	5,000	210,000	5,250	260,000	6,500	316,000	7,400
Crabs	7,200	250	13,350	467	18,000	630	21,600	756
Crawfish	20,000	3,000	25,000	3,750	30,000	4,800	20,000	3,000
Total	1,618,324	59,771	1,699,092	66,643	1,936,354	74,633	2,321,079	75,873

WASHINGTON.

GENERAL IMPORTANCE OF THE FISHERIES.

The fisheries of this State are more valuable than those of Oregon, owing to a greater development of the oyster industry, the pelagic fur-seal fishery, and the general fisheries for salt-water fish, although the extent of the salmon fishery is considerably less than in Oregon.

The fishing industry of the State has witnessed a gratifying increase yearly. In the face of the depressed condition of trade during part of the time covered by this report the fisheries underwent a noteworthy development, and the continued increase in the State's population will no doubt lead to a still more important fishing business.

As at present prosecuted the fisheries of Washington of special prominence are the salmon and sturgeon fisheries of the Columbia River, Grays Harbor, and Whatcom County, the oyster industry of Willapa Bay, the general food-fish and fur-seal fisheries of Puget Sound and Strait of Fuca, and the cod fishery of Skagit County.

The fishing industry of Washington in 1892 gave employment to 4,310 persons; the capital invested was $1,593,567; the value of the products was $931,568. Statistics showing the aggregate of the business in 1892 and in the three preceding years are given in the following tables:

Persons employed in the fisheries of Washington.

How engaged.	1889.	1890.	1891.	1892.
On fishing vessels	103	95	217	331
On transporting vessels	28	27	40	45
In shore fisheries	2,528	2,479	2,818	3,082
On shore, in canneries, etc	704	652	778	852
Total	3,363	3,253	3,853	4,310

Vessels, boats, apparatus, shore property, and cash capital of the fisheries of Washington.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels fishing	8	$30,850	9	$24,550	19	$45,850	33	$85,730
Tonnage	319.10		254.57		588.83		1,009.17	
Outfit		10,245		8,775		10,305		27,880
Vessels transporting	12	16,050	12	11,900	15	31,300	18	28,900
Tonnage	109.38		107.18		166.11		175.95	
Outfit		7,820		1,500		3,700		5,750
Boats	1,277	108,414	1,260	106,175	1,474	123,510	1,690	132,330
Apparatus—vessel fisheries:								
Seines	1	75	1	75	3	525	1	75
Gill nets							1	50
Lines		700		490		955		1,765
Guns and spears		1,400		1,400		3,153		4,517
Apparatus—shore fisheries:								
Gill nets	638	98,987	743	97,830	871	112,137	885	112,550
Pound and trap nets	137	92,300	74	58,200	118	117,200	157	124,700
Seines	120	38,950	126	36,750	151	4[illegible]	162	46,650
Reef nets					20	1,000	10	500
Minor nets	15	75	18	90	23	115	20	100
Wheels	9	26,000	12	48,500	14	45,000	17	49,000
Lines		3,320		3,630		3,071		4,065
Tongs, rakes, and hoes		392		3,492		4,195		3,505
Guns, spears, harpoons, etc		1,050		1,050		1,222		1,700
Shore property		363,450		308,280		442,550		417,800
Cash capital		461,000		405,000		495,000		546,000
Total		1,261,078		1,117,687		1,486,563		1,593,567

Products of the fisheries of Washington.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	.....	.....	4,700	$141	13,500	$405	15,000	$45
Blueback salmon	490,192	$19,427	1,487,100	39,558	1,145,858	26,764	2,513,932	62,1
Chinook salmon	10,207,756	455,913	9,547,343	291,333	9,723,073	358,123	9,843,627	363,9
Cod, salted	80,000	2,800	.....	.....	85,000	3,400	539,000	21,5
Cultus-cod	267,000	5,360	276,000	5,620	283,000	5,835	359,000	6,4
Dog salmon	413,327	4,189	918,773	8,328	1,021,051	9,066	3,310,115	22,1
Flounders	105,006	1,700	134,000	2,255	193,150	3,288	184,560	3,1
Halibut	685,000	15,640	740,000	16,750	994,500	23,620	1,410,500	25,1
Herring	215,000	2,475	407,000	4,590	508,000	5,750	617,112	6,4
Humpback salmon	322,392	5,615	.....	.....	752,941	11,957	.....	.....
Perch	23,000	460	44,000	880	60,000	1,500	65,140	1,3
Rockfish	102,000	2,910	110,000	3,075	150,000	4,275	163,000	4,5
Shad	21,010	2,055	44,167	3,519	59,900	3,590	103,350	3,8
Silver salmon	4,020,815	86,944	1,419,172	30,621	2,193,320	39,552	3,597,345	60,1
Smelt	203,000	3,750	236,000	4,500	272,000	5,160	321,726	6,1
Steelhead salmon	962,805	27,884	1,362,615	17,372	1,325,423	24,279	2,419,192	43,4
Sturgeon	218,985	2,300	255,263	2,871	503,327	5,468	543,623	5,7
Trout, black-spotted	12,060	1,800	15,000	2,700	16,000	2,895	20,000	3,6
Trout, salmon	13,000	390	15,000	450	18,000	540	20,000	6
Crabs	22,400	840	48,400	1,900	69,600	2,760	79,000	3,5
Shrimp	1,500	300	1,475	295	1,800	450	2,000	5
Clams	438,000	3,650	624,000	5,200	736,800	6,140	684,000	5,7
Oysters	7,547,400	128,604	8,889,000	147,930	9,985,680	154,961	9,895,440	147,9
Whales	.....	800	.....	600	.....	2,400	.....	6
Fur seals	.....	30,190	.....	58,906	.....	70,179	.....	121,5
Frogs	7,500	3,000	10,813	4,325	8,413	3,365	13,125	5,2
Dogfish oil	28,500	1,330	30,000	1,400	33,750	1,575	37,500	1,7
Total	26,407,582	810,326	26,619,821	655,119	30,154,686	777,282	36,757,287	931,5

The crabs, clams, oysters, frogs, oil, etc., specified by pounds in the foregoing table are, in the following supplementary table, reduced to the basis on which they are sold in the markets, and the number of whales and fur seals are shown:

Products.	1889.	1890.	1891.	1892.
Crabs.....number..	7,466	16,133	23,200	26,3
Clams.....bushels..	6,257	8,914	10,525	9,7
Oysters.....do....	125,790	148,150	166,428	164,7
Whales.....number..	4	3	12	
Fur seals.....do....	2,875	4,620	4,267	9,1
Frogs.....do....	36,060	51,900	40,380	63,0
Dogfish oil.....gallons..	3,800	4,000	4,500	5,0

DETAILED STATISTICS.

The following series of tables relates to the fisheries of Washington in the years 1889 to 1892, inclusive. Figures for each county are shown in detail.

Table showing by counties the number of persons employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Counties.	1889.					1890.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis	.....	.....	66	8	74	.....	.....	45	6	51
Clallam	.....	.....	315	.....	315	.....	.....	322	.....	322
Clarke	.....	.....	20	.....	20	.....	.....	20	.....	20
Cowlitz	.....	.....	30	2	32	.....	.....	42	5	47
Jefferson	12	.....	17	.....	29	12	.....	17	.....	29
King	91	.....	235	142	468	76	.....	287	89	452
Klickitat	.....	.....	50	.....	50	.....	.....	55	.....	55
Mason	.....	.....	64	6	70	.....	.....	64	6	70
Pacific	.....	23	576	184	783	.....	22	483	189	694
Pierce	.....	.....	118	3	121	7	.....	127	3	137
San Juan	.....	.....	.....	.....	.....	.....	.....	6	5	11
Skamania	.....	.....	20	.....	20	.....	.....	22	.....	22
Thurston	.....	.....	12	.....	12	.....	.....	12	.....	12
Wahkiakum	.....	5	1,005	359	1,369	.....	5	977	349	1,331
Total	103	28	2,528	704	3,363	95	27	2,479	652	3,253

Counties.	1891.					1892.				
	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.	On vessels fishing.	On vessels transporting.	In shore fisheries.	On shore, in canneries, etc.	Total.
Chehalis	.....	.....	45	4	49	.....	.....	68	10	78
Clallam	66	.....	356	.....	422	92	.....	387	.....	479
Clarke	.....	.....	20	.....	20	.....	.....	20	.....	20
Cowlitz	.....	.....	32	7	39	.....	.....	38	11	49
Jefferson	20	.....	17	.....	37	26	.....	17	.....	43
King	96	5	323	82	506	155	4	363	83	605
Klickitat	.....	.....	68	.....	68	.....	.....	63	.....	63
Mason	.....	.....	64	6	70	.....	.....	64	6	70
Pacific	.....	26	651	262	939	.....	32	726	299	1,057
Pierce	7	.....	139	5	151	20	.....	150	7	177
San Juan	.....	.....	6	5	11	.....	.....	6	5	11
Skagit	32	.....	.....	3	35	35	.....	.....	3	38
Skamania	.....	.....	22	.....	22	.....	.....	28	.....	28
Thurston	.....	.....	14	.....	14	.....	.....	14	.....	14
Wahkiakum	.....	5	857	332	1,194	.....	5	953	346	1,304
Whatcom	.....	4	204	72	280	3	4	185	82	274
Total	221	40	2,818	778	3,857	331	45	3,082	852	4,310

Table showing by counties the nativity of persons employed in the fisheries of Washington in 1892.

Counties.	Countries.														
	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.	Portugal.	Japan.	American Indians.	Total.
On vessels fishing:																
Clallam	7	....	....	....	....	....	....	....	....	....	....	....	....	....	85	
Jefferson	16	....	....	....	....	....	....	....	....	....	....	....	....	....	10	
King	106	....	16	6	....	....	....	....	2	9	....	....	....	....	16	
Pierce	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Skagit	24	....	3	3	....	....	....	....	....	....	....	....	2	....	3	
Whatcom	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Total	176	....	19	9	....	....	....	....	2	9	....	....	2	....	114	
On vessels transporting:																
King	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Pacific	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Wahkiakum	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Whatcom	3	....	....	....	....	....	....	....	....	1	....	....	....	....	....	
Total	44	....	....	....	....	....	....	....	....	1	....	....	....	....	....	
In shore or boat fisheries:																
Chehalis	40	14	8	6	....	....	....	....	....	....	....	....	....	....	....	
Clallam	16	....	11	....	....	....	....	....	....	....	....	....	....	....	360	
Clarke	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Cowlitz	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Jefferson	8	....	....	4	....	....	....	....	....	....	....	....	....	....	5	
King	58	....	59	49	102	55	40	....	....	....	....	....	....	....	....	
Klickitat	23	....	....	....	....	....	....	....	....	....	....	....	....	....	40	
Mason	45	....	....	....	....	....	....	....	....	....	....	8	....	....	11	
Pacific	295	77	83	48	18	....	2	9	1	10	....	....	....	....	183	
Pierce	25	....	50	41	....	....	5	....	2	....	....	....	7	....	20	
San Juan	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Skamania	6	19	3	....	....	....	....	....	....	....	....	....	....	....	....	
Thurston	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	
Wahkiakum	237	119	274	115	60	63	8	14	2	39	2	....	....	....	20	
Whatcom	50	....	20	15	....	....	....	....	....	....	....	....	....	....	100	
Total	867	229	508	278	180	118	55	23	5	49	2	8	7	....	753	3.
On shore, in canneries, etc.:																
Chehalis	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Cowlitz	10	....	....	....	....	....	....	....	....	....	....	1	....	....	....	
King	20	....	....	....	....	....	....	....	....	....	....	46	....	17	....	
Mason	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Pacific	63	4	1	....	....	....	....	1	....	1	....	229	....	....	....	
Pierce	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
San Juan	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Skagit	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	
Wahkiakum	39	....	1	....	....	....	....	1	....	....	....	305	....	....	....	
Whatcom	17	....	....	....	....	....	....	....	....	....	....	50	....	....	15	
Total	180	4	2	....	....	....	....	2	....	1	....	631	....	17	15	

ries of Washington.

ble showing ***by counties the nationality of persons employed in the fisheries of Washington in 1892.***

Counties.	Countries.														
	United States.	Russia.	Sweden.	Norway.	Austria.	Greece.	Italy.	Germany.	France.	Great Britain.	Holland.	China.	Portugal.	Japan.	American Indian.	Total.
Vessels fishing:																
Clallam	5	....	2	....	....	....	....	....	....	....	....	....	....	....	85	92
Jefferson	16	....	....	....	....	....	....	....	....	....	....	....	....	....	10	26
King	91	....	23	13	....	....	....	....	2	10	....	....	....	....	16	155
Pierce	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20
Skagit	22	....	5	3	....	....	....	....	....	....	....	....	2	....	3	35
Whatcom	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Total	157	....	30	16	....	....	....	....	2	10	....	....	2	....	114	331
Vessels transporting:																
King	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4
Pacific	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	32
Wahkiakum	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5
Whatcom	2	....	....	....	....	....	....	....	....	2	....	....	....	....	....	4
Total	43	....	....	....	....	....	....	....	....	2	....	....	....	....	....	45
Shore or boat fisheries:																
Chehalis	68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	68
Clallam	27	....	....	....	....	....	....	....	....	....	....	....	....	....	360	387
Clarke	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20
Cowlitz	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	38
Jefferson	12	....	....	....	....	....	....	....	....	....	....	....	....	....	5	17
King	363	....	....	....	....	....	....	....	....	....	....	....	....	....	....	363
Klickitat	23	....	....	....	....	....	....	....	....	....	....	....	....	....	40	63
Mason	45	....	....	....	....	....	....	....	....	....	....	8	....	....	11	64
Pacific	543	....	....	....	....	....	....	....	....	....	....	....	....	....	183	726
Pierce	130	....	....	....	....	....	....	....	....	....	....	....	....	....	20	150
San Juan	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6
Skamania	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28
Thurston	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	14
Wahkiakum	953	....	....	....	....	....	....	....	....	....	....	....	....	....	....	953
Whatcom	85	....	....	....	....	....	....	....	....	....	....	....	....	....	100	185
Total	2,341	....	....	....	....	....	....	....	....	....	....	8	....	....	733	3,082
Shore, in canneries, etc.:																
Chehalis	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10
Cowlitz	10	....	....	....	....	....	....	....	....	....	....	1	....	....	....	11
King	20	....	....	....	....	....	....	....	....	....	....	46	....	17	....	83
Mason	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6
Pacific	66	4	....	....	....	....	....	....	....	....	....	229	....	....	....	299
Pierce	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7
San Juan	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5
Skagit	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Wahkiakum	41	....	....	....	....	....	....	....	....	....	....	305	....	....	....	346
Whatcom	17	....	....	....	....	....	....	....	....	....	....	50	....	....	15	82
Total	185	4	....	....	....	....	....	....	....	....	....	631	....	17	15	852

Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892.

Years and counties.	Vessels fishing.				Vessels transporting.				Boats.	
	No.	Tonnage.	Value.	Value of outfit.	No.	Tonnage.	Value.	Value of outfit.	No.	Value.
1889.										
Chehalis									15	$1,500
Clallam									174	10,125
Clarke									10	750
Cowlitz									45	2,250
Jefferson	2	11.60	$950	$215					8	1,360
King	6	307.50	29,900	10,030					97	7,885
Klickitat									9	140
Mason									118	3,560
Pacific					11	72.37	$9,050	$920	295	20,494
Pierce									92	3,430
Skamania									6	120
Thurston									30	1,000
Wahkiakum					1	37.01	7,000	6,900	378	55,800
Total	8	319.10	30,850	10,245	12	109.38	16,050	7,820	1,277	108,414
1890.										
Chehalis									25	1,750
Clallam									177	10,250
Clarke									14	1,050
Cowlitz									55	2,950
Jefferson	2	11.60	950	220					8	1,330
King	5	223.05	21,900	7,705					81	6,980
Klickitat									9	140
Mason									118	3,560
Pacific					11	70.17	4,900		281	18,850
Pierce	2	19.92	1,700	850					97	3,745
San Juan									4	250
Skamania									6	120
Thurston									30	1,000
Wahkiakum					1	37.01	7,000	1,500	355	54,200
Total	9	254.57	24,550	8,775	12	107.18	11,900	1,500	1,260	106,175
1891.										
Chehalis									25	1,750
Clallam	3	98.40	3,100	2,205					205	11,900
Clarke									11	825
Cowlitz									54	2,550
Jefferson	4	22.66	1,650	720					8	1,330
King	7	261.06	24,400	3,255	1	33.66	10,000	1,000	98	8,730
Klickitat									10	160
Mason									118	3,560
Pacific					12	83.55	10,800	300	385	31,647
Pierce	3	28.08	2,700	1,325					102	4,070
San Juan									4	250
Skagit	2	178.63	14,000	2,800						
Skamania									6	120
Thurston									31	1,018
Wahkiakum					1	37.01	7,000	1,500	357	52,600
Whatcom					1	11.89	3,500	900	60	3,000
Total	19	588.83	45,850	10,305	15	166.11	31,300	3,700	1,474	123,510
1892.										
Chehalis									49	3,025
Clallam	7	178.29	6,700	3,205					210	12,250
Clarke									13	975
Cowlitz									58	2,800
Jefferson	8	76.90	4,250	1,810					8	965
King	15	448.83	40,600	15,675	1	10.82	3,500	750	107	11,005
Klickitat									11	170
Mason									118	3,560
Pacific					15	113.94	12,400	2,100	508	40,195
Pierce	5	103.79	18,180	4,010					130	5,075
San Juan									4	250
Skagit	2	178.63	14,000	3,100						
Skamania									6	120
Thurston									31	1,015
Wahkiakum					1	37.01	7,000	1,500	397	48,175
Whatcom	1	22.73	2,000	80	1	14.18	6,000	1,400	40	2,750
Total	33	1,009.17	85,730	27,880	18	175.95	28,900	5,750	1,690	132,330

Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Apparatus—vessel fisheries.				Apparatus—shore fisheries.							
	Seines and gill nets.		Value of lines.	Value of guns and spears.	Gill nets.		Pound and trap nets.		Seines.		Reef nets.	
	No.	Value.			No.	Value.	No.	Value.	No.	Value.	No.	Value.
1889.												
Chehalis					59	$3,250	28	$19,400				
Clarke					39	925						
Cowlitz					20	3,075						
Jefferson	1	$75	$70						2	$150		
King			630	$1,400	103	2,312	9	5,500	20	11,300		
Klickitat					25	375	2	800				
Pacific					60	11,650	91	61,800	2	1,000		
Pierce							2	1,600	65	8,800		
Skamania					20	300						
Wahkiakum					312	77,100	5	3,200	31	17,700		
Total	1	75	700	1,400	638	98,987	137	92,300	120	38,950		
1890.												
Chehalis					70	2,600						
Clarke					50	1,250						
Cowlitz					30	4,500						
Jefferson	1	75	70						2	150		
King			270	1,400	210	4,000			22	10,200		
Klickitat					25	375	2	800				
Pacific					22	7,500	68	54,400	2	1,000		
Pierce			150				2	1,600	71	9,550		
San Juan									2	450		
Skamania					20	300						
Wahkiakum					306	77,305	2	1,400	27	15,400		
Total	1	75	490	1,400	743	97,830	74	58,200	126	36,750		
1891.												
Chehalis					70	2,600						
Clallam				853					2	200		
Clarke					43	1,025						
Cowlitz					22	3,375						
Jefferson	1	75	150						2	150		
King			275	1,700	285	4,937			30	15,625		
Klickitat					28	395	2	800				
Pacific					79	21,100	107	108,600	2	1,000		
Pierce			230				2	1,600	81	10,800		
San Juan									2	450		
Skagit			300	600								
Skamania					20	300						
Wahkiakum					304	76,905	5	3,200	28	15,900		
Whatcom					20	1,500	2	3,000	6	2,100	20	$1,000
Total	1	75	955	3,153	871	112,137	118	117,200	153	46,225	20	1,000
1892.												
Chehalis					66	3,960						
Clallam	a 1	50	25	1,117					5	500		
Clarke					49	1,000						
Cowlitz					24	3,675						
Jefferson	1	75	345						2	150		
King			595	2,800	310	5,250	3	1,500	36	20,000		
Klickitat					32	410	2	800				
Pacific					103	30,400	141	109,800	4	2,600		
Pierce			450				2	1,600	91	12,050		
San Juan									2	450		
Skagit			300	600								
Skamania					20	300						
Wahkiakum					261	66,055	4	2,500	12	7,400		
Whatcom			50		20	1,500	5	8,500	10	3,500	10	500
Total	2	125	1,765	4,517	885	112,550	157	124,700	162	46,650	10	500

a Gill net.

Table showing by counties the apparatus and capital employed in the fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Years and counties.	Minor nets.		Wheels.		Value of lines.	Value of tongs, rakes, and hoes.	Value of guns, spears, harpoons, etc.	Value of shore property.	Cash capital.	Total investment.
	No.	Value.	No.	Value.						
1889.										
Chehalis								$34,000	$30,000	$88,150
Clallam			2	$4,000	$825		$1,050			12,000
Clarke								2,000		7,675
Cowlitz					2,100			7,000	3,000	17,425
Jefferson					305			2,000		5,125
King						$50		41,500	45,000	155,507
Klickitat	15	$75	3	11,500						12,890
Mason						172		1,000	5,000	9,732
Pacific								80,400	134,000	319,314
Pierce					90	130		5,000	5,000	24,050
Skamania			4	10,500						10,920
Thurston						40				1,040
Wahkiakum								190,550	239,000	597,250
Total	15	75	9	26,000	3,320	392	1,050	363,450	461,000	1,261,078
1890.										
Chehalis								1,000		5,350
Clallam					850		1,050			12,150
Clarke			2	4,000				2,000		8,300
Cowlitz					2,380			7,000	3,000	19,850
Jefferson					305			2,000		5,100
King						50		44,000	28,000	124,505
Klickitat	18	90	3	11,500						12,905
Mason						172		1,000	5,000	9,732
Pacific						3,100		55,400	114,000	259,150
Pierce					95	130		5,000	5,000	27,820
San Juan								1,000		1,700
Skamania			7	33,000						33,420
Thurston						40				1,040
Wahkiakum								189,880	250,000	590,685
Total	18	90	12	48,500	3,630	3,492	1,050	308,280	405,000	1,117,687
1891.										
Chehalis								1,000		5,350
Clallam						875	1,050			20,183
Clarke			2	4,000				2,000		7,850
Cowlitz					2,660			7,000	6,000	21,585
Jefferson					265			2,000		6,340
King					50			42,000	45,000	156,972
Klickitat	23	115	5	21,500						22,970
Mason						43	172	1,000	5,000	9,775
Pacific						3,100		140,650	177,000	494,197
Pierce					96	135		25,000	20,000	65,956
San Juan								1,000		1,700
Skagit								5,500	5,000	28,200
Skamania			7	19,500						19,920
Thurston						42				1,060
Wahkiakum								190,400	207,000	554,595
Whatcom								25,000	30,000	70,000
Total	23	115	14	45,000	3,071	4,195	1,222	442,550	495,000	1,486,563
1892.										
Chehalis								8,000	30,000	44,985
Clallam					900		1,700			26,447
Clarke			3	5,000				3,000		9,975
Cowlitz					2,800			7,500	6,000	22,775
Jefferson					265			2,000		9,860
King						50		45,000	50,000	196,725
Klickitat	20	100	6	23,000						24,480
Mason						172		1,000	5,000	9,732
Pacific						3,100		142,300	213,000	555,895
Pierce					100	143		25,000	25,000	91,608
San Juan								1,000		1,700
Skagit								5,500	5,000	28,500
Skamania			8	21,000						21,420
Thurston						40				1,055
Wahkiakum								147,500	172,000	452,130
Whatcom								30,000	40,000	90,280
Total	20	100	17	49,000	4,065	3,505	1,700	417,800	546,000	1,593,567

Table showing by counties and species the yield of the fisheries of Washington in 1889.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					51,750	$1,737	13,000	$390
Chinook salmon	1,085,075	$21,701			30,200	1,310	81,000	3,240
Coltus-cod			130,000	$2,500				
Dog salmon			47,210	965				
Halibut			300,000	4,500				
Humpback salmon			39,350	810				
Rockfish			60,000	1,650				
Silver salmon	1,282,200	32,044	86,440	2,695			26,675	667
Steelhead salmon					8,920	263	42,325	1,143
Sturgeon							218,985	2,300
Whales				800				
Total	2,367,275	53,745	663,000	13,920	90,870	3,310	381,985	7,740

Species.	Jefferson.		King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					172,817	$5,898			111,850	$5,586
Chinook salmon			80,248	$1,328	112,925	3,667			1,632,953	71,569
Cod, salted			80,000	2,800						
Coltus-cod	24,000	$600	8,000	160						
Dog salmon	4,000	80	289,247	2,415						
Flounders			25,000	500						
Halibut	61,000	1,420	320,000	9,600						
Herring	15,000	300	35,000	525						
Humpback salmon			181,427	2,764						
Perch			23,000	460						
Shad									14,125	1,412
Silver salmon	14,000	580	1,086,960	13,922	39,005	836			1,198,000	29,950
Smelt	25,000	750	33,000	825						
Steelhead salmon			90,570	1,811	10,870	326			251,520	7,544
Crabs			14,400	600						
Clams			108,000	900						
Oysters							1,500,000	$37,500	5,609,400	81,804
Fur seals				30,190						
Frogs			7,500	3,000						
Total	143,000	3,730	2,385,352	72,300	335,617	10,727	1,500,000	37,500	8,817,848	197,865

Species.	Pierce.		Skamania.		Thurston.		Wahkiakum.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Blueback salmon			133,315	$5,443			7,460	$373	490,192	$19,427
Chinook salmon	15,980	$480	99,275	4,001			7,070,100	348,117	10,207,756	$455,913
Cod, salted									80,000	2,800
Coltus-cod	105,000	2,100							267,000	5,360
Dog salmon	72,870	729							413,327	4,189
Flounders	80,000	1,200							105,000	1,700
Halibut	4,000	120							685,000	15,640
Herring	165,000	1,650							215,000	2,475
Humpback salmon	98,615	2,041							322,392	5,615
Perch									23,000	460
Rockfish	42,000	1,260							102,000	2,910
Shad	1,000	55					5,885	588	21,010	2,055
Silver salmon	287,535	6,250							4,020,815	86,944
Smelt	145,000	2,175							203,000	3,750
Steelhead salmon			5,010	190			553,590	10,607	962,805	27,884
Sturgeon									218,985	2,300
Trout, black-spotted	12,000	1,800							12,000	1,800
Trout, salmon	13,000	390							13,000	390
Crabs	8,000	240							22,400	840
Shrimp	1,500	300							1,500	300
Clams	330,000	2,750							438,000	3,650
Oysters	360,000	7,500			78,000	$1,800			7,547,400	128,604
Whales										800
Fur seals										30,190
Frogs									7,500	3,000
Dogfish oil	28,500	1,330							28,500	1,330
Total	1,770,000	32,370	237,600	9,634	78,000	1,800	7,637,035	365,685	26,407,582	810,326

Table showing by counties and species the yield of the fisheries of Washington in 1890.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					152,170	$3,055	20,000	$700		
Chinook salmon	75,000	$1,875			75,300	2,259	137,000	5,480		
Cultus-cod			120,000	$2,350					28,000	$710
Dog salmon			63,800	1,275					6,000	120
Halibut			280,000	4,200					80,000	1,900
Herring									17,000	340
Rockfish			65,000	1,725						
Silver salmon	150,000	3,750	96,200	3,000			37,150	743	16,000	680
Smelt									20,000	600
Steelhead salmon					24,680	247	70,850	1,717		
Sturgeon							255,263	2,871		
Whales				600						
Total	225,000	5,625	625,000	13,150	252,150	5,561	520,263	11,511	167,000	4,350

Species.	King.		Klickitat.		Mason.		Pacific.		Pierce.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod			357,535	$9,913			213,515	$4,270	4,700	$141
Blueback salmon			212,410	5,531			2,119,975	63,602		
Chinook salmon	93,793	$2,686							38,390	1,152
Cultus-cod	11,000	220							117,000	2,340
Dog salmon	745,485	5,899							103,488	1,034
Flounders	49,000	980							85,000	1,275
Halibut	177,000	5,310							203,000	5,340
Herring	70,000	1,050							170,000	1,700
Perch	44,000	880								
Rockfish									45,000	1,350
Shad							26,125	2,090	9,237	724
Silver salmon	719,700	13,952	42,000	682					358,122	7,814
Smelt	66,000	1,650							150,000	2,250
Steelhead salmon	172,460	3,449	117,875	1,733			412,430	4,123		
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs	38,400	1,600							10,000	300
Shrimp									1,475	295
Clams	204,000	1,700							420,000	3,500
Oysters					1,524,000	$38,100	6,898,200	100,598	390,000	7,312
Fur seals		58,906								
Frogs	10,813	4,325								
Dogfish oil									30,000	1,400
Total	2,401,651	102,607	729,820	17,859	1,524,000	38,100	9,670,245	174,683	2,165,412	41,077

Species.	San Juan.		Skamania.		Thurston.		Wahkiakum.		Total.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
Black-cod									4,700	$141
Blueback salmon			684,745	$20,442			59,135	$1,178	1,487,100	39,558
Chinook salmon			518,675	15,560			6,276,800	193,188	9,547,343	291,333
Cultus-cod									276,000	5,629
Dog salmon									918,773	8,328
Flounders									134,000	2,255
Halibut									740,000	16,750
Herring	150,000	$1,500							407,000	4,590
Perch									44,000	880
Rockfish									110,000	3,075
Shad							8,805	705	44,167	3,519
Silver salmon									1,419,172	30,621
Smelt									236,000	4,500
Steelhead salmon			29,080	752			535,240	5,351	1,352,615	17,372
Sturgeon									255,263	2,871
Trout, black-spotted									15,000	2,700
Trout, salmon									15,000	450
Crabs									48,400	1,900
Shrimp									1,475	295
Clams									624,000	5,200
Oysters					76,800	$1,920			8,889,000	147,930
Whales										600
Fur seals										58,906
Frogs									10,813	4,325
Dogfish oil									30,000	1,400
Total	150,000	1,500	1,232,500	36,754	76,800	1,920	6,879,980	200,422	26,619,821	655,119

Table showing by counties and species the yield of the fisheries of Washington in 1891.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					53,830	$1,855	12,000	$420		
Chinook salmon	60,000	$1,500			35,500	1,275	82,500	3,300		
Cultus-cod			115,000	$2,275					24,000	$620
Dog salmon			55,140	1,060					13,000	260
Flounders			8,150	163						
Halibut			315,000	5,350					120,000	2,950
Herring			15,000	150					16,000	320
Humpback salmon			37,880	757						
Rockfish			100,000	2,775						
Silver salmon	130,000	3,150	103,980	3,163			53,400	1,068	23,500	965
Smelt									22,000	660
Steelhead salmon					9,300	254	68,600	1,537		
Sturgeon							503,327	5,468		
Whales				2,400						
Fur seals				14,947						
Total	190,000	4,650	750,150	33,040	98,630	3,384	719,827	11,793	218,500	5,775

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon			147,773	$3,520			251,750	$5,034
Chinook salmon	146,063	$3,530	73,848	2,061			3,603,300	136,559
Cultus-cod	12,000	300						
Dog salmon	861,472	6,832						
Flounders	70,000	1,400						
Halibut	207,000	6,480						
Herring	102,000	1,530						
Humpback salmon	619,416	9,288						
Perch	60,000	1,500						
Shad							42,180	2,531
Silver salmon	931,081	17,220	48,330	1,020			443,000	4,730
Smelt	75,000	1,875						
Steelhead salmon	209,320	4,187	78,314	2,046			464,709	6,537
Crabs	57,600	2,400						
Clams	270,000	2,250						
Oysters					1,560,000	$39,000	7,890,480	105,206
Fur seals		45,632						
Frogs	8,413	3,365						
Total	3,629,365	107,789	348,865	8,647	1,560,000	39,000	12,695,419	260,597

Species.	Pierce.		San Juan.		Skagit.		Skamania.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	13,500	$405						
Blueback salmon							118,925	$3,568
Chinook salmon	56,612	1,698					171,875	5,181
Cod, salted					85,000	$3,400		
Cultus-cod	132,000	2,640						
Dog salmon	91,439	914						
Flounders	115,000	1,725						
Halibut	352,500	8,840						
Herring	175,000	1,750	200,000	$2,000				
Humpback salmon	95,645	1,912						
Rockfish	50,000	1,500						
Shad	1,012	57						
Silver salmon	356,304	7,136						
Smelt	175,000	2,625						
Steelhead salmon							67,010	1,950
Trout, black-spotted	16,000	2,880						
Trout, salmon	18,000	540						
Crabs	12,000	360						
Shrimp	1,800	450						
Clams	466,800	3,890						
Oysters	420,000	7,875						
Fur seals						9,600		
Dogfish oil	33,750	1,575						
Total	2,582,362	48,772	200,000	2,000	85,000	13,000	357,810	10,699

Table showing by counties and species the yield of the fisheries of Washington in 1891—Continued.

Species.	Thurston.		Wahkiakum.		Whatcom.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod							13,500	$405
Blueback salmon			38,820	$1,165	522,760	$11,202	1,145,858	26,764
Chinook salmon			5,493,975	203,019			9,723,673	358,123
Cod, salted							85,000	3,400
Cultus-cod							283,000	5,935
Dog salmon							1,021,051	9,066
Flounders							193,150	3,286
Halibut							994,500	23,620
Herring							508,000	5,750
Humpback salmon							752,941	11,957
Perch							60,000	1,500
Rockfish							150,000	4,275
Shad			16,708	1,002			59,900	3,590
Silver salmon					103,125	1,100	2,193,320	39,552
Smelt							272,000	5,760
Steelhead salmon			428,170	7,708			1,325,423	24,270
Sturgeon							503,327	7,408
Trout, black-spotted							16,000	2,400
Trout, salmon							18,000	
Crabs							69,600	
Shrimp							1,800	450
Clams							36,800	6,140
Oysters	115,200	$2,880					9,985,680	154,961
Whales								2,400
Fur seals								70,179
Frogs							8,413	3,365
Dogfish oil							33,750	1,575
Total	115,200	2,880	5,977,673	212,954	625,885	12,302	30,154,686	777,282

Table showing by counties and species the yield of the fisheries of Washington in 1892.

Species.	Chehalis.		Clallam.		Clarke.		Cowlitz.		Jefferson.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon					162,500	$4,875	15,000	$450		
Chinook salmon	398,738	$7,043			65,825	2,215	110,000	4,400		
Cultus-cod			119,000	$2,345					96,000	$1,590
Dog salmon	322,000	1,610	93,690	1,805					4,000	80
Flounders			12,400	248						
Halibut			359,000	6,135					355,000	6,950
Herring			25,000	250					12,000	240
Rockfish			123,000	3,315						
Silver salmon	751,477	13,397	152,310	4,215			27,600	552	11,000	470
Smelt									23,000	690
Steelhead salmon					35,400	972	49,400	863		
Sturgeon	38,000	190					505,623	5,567		
Whales				600						
Fur seals				19,237						
Total	1,510,215	22,240	884,400	38,150	263,725	8,092	707,623	11,832	501,000	10,020

Species.	King.		Klickitat.		Mason.		Pacific.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Blueback salmon			319,952	$8,306			943,[illegible]	[illegible]8,970
Chinook salmon	145,384	$4,136	144,855	4,149			3,456 [illegible]	[illegible] 118
Cod, salted	175,000	7,000						
Cultus-cod	16,000	380						
Dog salmon	1,916,220	12,562					203,000	1,015
Flounders	72,160	1,443						
Halibut	348,000	10,150						
Herring	105,112	1,577						
Perch	65,140	1,303						
Shad							62,400	1,872
Silver salmon	1,268,614	22,651	73,054	1,683			756,000	7,560
Smelt	98,726	2,468						
Steelhead salmon	261,142	5,222	280,870	4,933			[illegible]	11,024
Crabs	60,000	2,500					3,000	750
Oysters					1,576,800	32,850	7,[illegible]	101,179
Clams	300,000	2,500						
Fur seals		98,511						
Frogs	13,125	5,250						
Total	4,844,623	177,653	818,731	19,071	1,567,800	32,850	13,809,720	279,388

Table showing by counties and species the yield of Washington fisheries in 1892—Cont'd.

Species.	Pierce.		San Juan.		Skagit.		Skamania.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod	15,000	$450						
Blueback salmon							432,280	$12,968
Chinook salmon	140,400	4,212					257,400	7,762
Cod, salted					364,000	$14,560		
Cultus-cod	128,000	2,560						
Dog salmon	165,880	1,659						
Flounders	100,000	1,500						
Halibut	348,000	5,890						
Herring	225,000	2,250	250,000	$2,500				
Rockfish	40,000	1,200						
Shad	1,100	55						
Silver salmon	393,340	7,866						
Smelt	200,000	3,000						
Steelhead salmon							383,190	8,421
Trout, black-spotted	20,000	3,600						
Trout, salmon	20,000	600						
Crabs	10,000	300						
Shrimp	2,000	500						
Oysters	598,200	11,216						
Clams	384,000	3,200						
Fur seals						3,780		
Dogfish oil	37,500	1,750						
Total	2,828,420	51,808	250,000	2,500	364,000	18,340	1,072,870	29,151

Species.	Thurston.		Wahkiakum.		Whatcom.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Black-cod							15,000	$450
Blueback salmon			366,000	$10,986	274,225	$5,876	2,513,932	62,431
Chinook salmon			5,124,250	193,298			9,843,627	367,363
Cod, salted							539,000	21,560
Cultus-cod							359,000	6,875
Dog salmon					605,325	3,459	3,310,115	22,190
Flounders							184,560	3,191
Halibut					500	15	1,410,500	29,140
Herring							617,112	6,817
Perch							65,140	1,303
Rockfish							163,000	4,515
Shad			39,850	1,256			103,350	3,183
Silver salmon					163,950	1,749	3,597,345	60,143
Smelt							321,726	6,158
Steelhead salmon			619,060	11,084			2,419,192	43,419
Sturgeon							543,623	5,757
Trout, black-spotted							20,000	3,600
Trout, salmon							20,000	600
Crabs							79,000	3,550
Shrimp							2,000	500
Oysters	132,000	$2,750					9,895,440	147,995
Clams							684,000	5,700
Whales								600
Fur seals								121,528
Frogs							13,125	5,250
Dogfish oil							37,500	1,750
Total	132,000	2,750	6,149,160	216,624	1,044,000	11,099	36,757,287	931,568

Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892.

Year.	Counties.	Species.	Lines.		Seines and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1889..	[illegible]	Cultus-cod	5,000	$100					5,000	$100
		Dog salmon			4,000	$80			4,000	80
		Halibut	20,000	600					20,000	600
		Silver salmon			8,000	280			8,000	280
		Total	25,000	700	12,000	360			37,000	1,060
1889..	King	Cod, salted	80,000	2,800					80,000	2,800
		Cultus-cod	8,000	160					8,000	160
		Halibut	320,000	9,600					320,000	9,600
		Fur seals					2,875	$30,190		30,190
		Total	408,000	12,560			2,875	30,190	408,000	42,750
		Grand total	433,000	13,260	12,000	360	2,875	30,190	445,000	43,810

Table showing by counties, species, and apparatus of capture the yield of vessel fisheries of Washington in 1889, 1890, 1891, and 1892—Continued.

Year.	Counties.	Species.	Lines.		Seines and gill nets.		Guns and spears.		Total.	
			Lbs.	Value.	Lbs.	Value.	No.	Value.	Lbs.	Value.
1890	Jefferson ...	Cultus-cod	7,000	$140	.....	.....	.....	.....	7,000	$140
		Dog salmon	.....	.....	6,000	$120	.....	.....	6,000	120
		Halibut	30,000	900	.....	.....	.....	.....	30,000	900
		Silver salmon	.....	.....	9,000	330	.....	.....	9,000	330
		Total	37,000	1,040	15,000	450	.....	.....	52,000	1,490
1890..	King	Cultus-cod	11,000	220	.....	.....	.....	.....	11,000	220
		Halibut	177,000	5,310	.....	.....	.....	.....	177,000	5,310
		Fur seals	.....	.....	.....	.....	4,620	$58,906	.....	58,906
		Total	188,000	5,530	.....	.....	4,620	58,906	188,000	64,436
1890..	Pierce	[illegible]	4,700	141	.....	.....	.....	.....	4,700	141
		Co[illegible]	2,000	40	.....	.....	.....	.....	2,000	40
		Hali[illegible]	200,000	5,250	.....	.....	.....	.....	200,000	5,250
		Total	206,700	5,431	.....	.....	.....	.....	206,700	5,431
		Grand total	431,700	12,001	15,000	450	4,620	58,906	446,700	71,357
1891..	Clallam	Fur seals	.....	.....	.....	.....	815	14,947	.....	14,947
1891..	Jefferson ...	Cultus-cod	10,000	200	.....	.....	.....	.....	10,000	200
		Dog salmon	.....	.....	13,000	260	.....	.....	13,000	260
		Halibut	60,000	1,750	.....	.....	.....	.....	60,000	1,750
		Silver salmon	.....	.....	17,000	640	.....	.....	17,000	640
		Total	70,000	1,950	30,000	900	.....	.....	100,000	2,850
1891..	King	Cultus-cod	12,000	300	.....	.....	.....	.....	12,000	300
		Halibut	207,000	6,480	.....	.....	.....	.....	207,000	6,480
		Fur seals	.....	.....	.....	.....	2,852	45,632	.....	45,632
		Total	219,000	6,780	.....	.....	2,852	45,632	219,000	52,412
1891..	Pierce	Black-cod	13,500	405	.....	.....	.....	.....	13,500	405
		Cultus-cod	2,000	40	.....	.....	.....	.....	2,000	40
		Halibut	349,000	8,735	.....	.....	.....	.....	349,000	8,735
		Total	364,500	9,180	.....	.....	.....	.....	364,500	9,180
1891..	Skagit	Cod, salted	85,000	3,400	.....	.....	.....	.....	85,000	3,400
		Fur seals	.....	.....	.....	.....	600	9,600	.....	9,600
		Total	85,000	3,400	.....	.....	600	9,600	85,000	13,000
		Grand total	738,500	21,310	30,000	900	4,267	70,179	768,500	92,389
1892..	Clallam	Cultus-cod	2,000	40	.....	.....	.....	.....	2,000	40
		Dog salmon	.....	.....	*2,000	40	.....	.....	2,000	40
		Halibut	5,000	100	.....	.....	.....	.....	5,000	100
		Silver salmon	.....	.....	*3,000	110	.....	.....	3,000	110
		Fur seals	.....	.....	.....	.....	1,743	16,537	.....	16,537
		Total	7,000	140	5,000	150	1,743	16,537	12,000	16,827
1892..	Jefferson ...	Cultus-cod	59,000	730	.....	.....	.....	.....	59,000	730
		Dog salmon	.....	.....	4,000	80	.....	.....	4,000	80
		Halibut	265,000	5,150	.....	.....	.....	.....	265,000	5,150
		Silver salmon	.....	.....	6,000	220	.....	.....	6,000	220
		Total	324,000	5,880	10,000	300	.....	.....	334,000	6,180
1892..	King	Cod, salted	175,000	7,000	.....	.....	.....	.....	175,000	7,000
		Cultus-cod	16,000	380	.....	.....	.....	.....	16,000	380
		Halibut	348,000	10,150	.....	.....	.....	.....	348,000	10,150
		Fur seals	.....	.....	.....	.....	6,830	98,511	.....	98,511
		Total	539,000	17,530	.....	.....	6,830	98,511	539,000	116,041
1892..	Pierce	Black-cod	15,000	450	.....	.....	.....	.....	15,000	450
		Cultus-cod	3,000	60	.....	.....	.....	.....	3,000	60
		Halibut	345,000	5,800	.....	.....	.....	.....	345,000	5,800
		Total	363,000	6,310	.....	.....	.....	.....	363,000	6,310
1892..	Skagit	Cod, salted	364,000	14,560	.....	.....	.....	.....	364,000	14,560
		Fur seals	.....	.....	.....	.....	270	3,780	.....	3,780
		Total	364,000	14,560	.....	.....	270	3,780	364,000	18,340
1892..	Whatcom	Halibut	500	15	.....	.....	.....	.....	500	15
		Grand total	1,597,500	44,435	15,000	450	8,843	118,828	1,612,500	163,713

* Caught with gill net.

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	1,085,075	$21,701						
Silver salmon	662,750	16,558	619,450	$15,486				
Total	1,747,825	38,259	619,450	15,486				
Clallam:								
Cultus-cod							130,000	$2,500
Dog salmon							47,210	965
Halibut							300,000	4,500
Humpback salmon							39,350	810
Rockfish							60,000	1,650
Silver salmon							86,440	2,695
Total							663,000	13,120
Clarke:								
Blueback salmon	47,000	1,500						
Chinook salmon	20,000	800						
Steelhead salmon	6,000	175						
Total	73,000	2,475						
Cowlitz:								
Blueback salmon	13,000	390						
Chinook salmon	81,000	3,240						
Silver salmon	26,675	667						
Steelhead salmon	42,325	1,143						
Sturgeon							218,985	2,300
Total	163,000	5,440					218,985	2,300
Jefferson:								
Cultus-cod							19,000	500
Halibut							41,000	820
Herring					15,000	$300		
Silver salmon							6,000	300
Smelt					25,000	750		
Total					40,000	1,050	66,000	1,620
King:								
Chinook salmon	35,861	984	17,273	327	27,114	517		
Dog salmon	155,347	1,483	12,115	61	121,785	871		
Flounders					25,000	500		
Herring	26,250	394			8,750	131		
Humpback salmon	29,255	439	17,212	257	137,960	2,068		
Perch					23,000	460		
Silver salmon	208,583	4,249	375,830	4,021	502,547	5,652		
Smelt					33,000	325		
Steelhead salmon	57,606	1,152	11,520	230	21,450	429		
Crabs					14,400	600		
Total	512,896	8,701	433,950	4,896	915,006	12,053		
Klickitat:								
Blueback salmon	15,000	600	14,000	560				
Chinook salmon	8,500	340	5,000	200				
Steelhead salmon	2,000	60	1,000	30				
Total	25,500	1,000	20,000	790				
Pacific:								
Blueback salmon	90	4	106,995	5,344	4,765	238		
Chinook salmon	608,200	20,332	990,573	49,528	34,178	1,709		
Shad			14,125	1,412				
Silver salmon	399,330	9,983	758,670	19,967				
Steelhead salmon	1,120	33	221,160	6,634	29,240	877		
Total	1,008,740	30,352	2,131,525	82,885	68,183	2,824		
Pierce:								
Chinook salmon			3,500	105	12,480	375		
Cultus-cod							105,000	2,100
Dog salmon			21,405	214	51,465	515		
Flounders					80,000	1,200		
Halibut							4,000	120
Herring					165,000	1,650		
Humpback salmon			22,125	443	76,490	1,598		
Rockfish							42,000	1,260
Shad			500	30	500	25		
Silver salmon			71,320	1,558	216,215	4,692		
Smelt					145,000	2,175		
Trout, black-spotted							12,000	1,800
Trout, salmon					13,000	390		
Crabs					8,000	240		
Shrimp					1,500	300		
Total			118,850	2,350	769,650	13,160	163,000	5,280

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Skamania:								
Blueback salmon	11,000	$550						
Chinook salmon	3,000	150						
Steelhead salmon	1,000	30						
Total	15,000	730						
Wahkiakum:								
Blueback salmon					7,460	$373		
Chinook salmon	5,440,350	266,630	69,375	$3,469	1,560,375	78,018		
Shad			5,875	587	10	1		
Steelhead salmon	132,580	3,977	10,470	314	410,540	12,316		
Total	5,572,930	270,607	85,720	4,370	1,978,385	90,708		
All counties:								
Blueback salmon	86,090	3,044	120,995	5,904	12,225	611		
Chinook salmon	7,281,986	314,177	1,085,723	53,629	1,634,147	80,619		
Cultus-cod							254,000	$5,100
Dog salmon	155,347	1,483	33,520	275	173,250	1,386	47,210	965
Flounders					105,000	1,700		
Halibut							345,000	5,440
Herring	26,250	394			188,750	2,081		
Humpback salmon	29,255	439	39,337	700	214,450	3,666	39,350	810
Perch					23,000	460		
Rockfish							102,000	2,910
Shad			20,500	2,029	510	26		
Silver salmon	1,297,338	31,457	1,865,270	41,032	718,762	10,344	92,440	2,995
Smelt					203,000	3,750		
Steelhead salmon	242,625	6,570	244,150	7,208	461,230	13,622		
Sturgeon							218,985	2,300
Trout, black-spotted							12,000	1,800
Trout, salmon					13,000	390		
Crabs					22,400	840		
Shrimp					1,500	300		
Grand total	9,118,891	357,564	3,409,495	110,777	3,771,224	119,795	1,110,985	22,320

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales								$800
Clarke:								
Blueback salmon	4,750	$237						
Chinook salmon	10,200	510						
Steelhead salmon	2,920	88						
Total	17,870	835						
King:								
Frogs			7,500	$3,000				
Clams					108,000	$900		
Total			7,500	3,000	108,000	900		
Klickitat:								
Blueback salmon	103,257	4,130	40,560	608				
Chinook salmon	65,425	2,617	34,000	510				
Silver salmon	16,780	503	22,225	333				
Steelhead salmon	7,870	236						
Total	193,332	7,486	96,785	1,451				
Mason:								
Oysters					1,500,000	37,500		
Pacific:								
Oysters					5,609,400	81,804		
Pierce:								
Clams					330,000	2,750		
Oysters					360,000	7,500		
Dogfish oil							28,500	1,330
Total					690,000	10,250	28,500	1,330

Tables showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1889—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Skamania:								
Blueback salmon	122,315	$4,893						
Chinook salmon	96,275	3,851						
Steelhead salmon	4,010	160						
Total	222,600	8,904						
Thurston:								
Oysters					78,000	$1,800		
All counties:								
Blueback salmon	230,322	9,260	40,560	$608				
Chinook salmon	171,900	6,978	34,000	510				
Silver salmon	16,780	503	22,225	333				
Steelhead salmon	14,800	484						
Frogs			7,500	3,000				
Clams					438,000	3,650		
Oysters					7,547,400	128,604		
Dogfish oil							28,500	$1,330
Whales								800
Grand total	433,802	17,225	104,285	4,451	7,985,400	132,254	28,500	2,130

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	75,000	$1,875						
Silver salmon	150,000	3,750						
Total	225,000	5,625						
Clallam:								
Cultus-cod							120,000	$2,350
Halibut							280,000	4,200
Rockfish							65,000	1,725
Dog salmon							63,800	1,275
Silver salmon							96,200	3,000
Total							625,000	12,550
Clarke:								
Blueback salmon	85,920	1,730						
Chinook salmon	34,000	1,020						
Steelhead salmon	6,000	60						
Total	125,920	2,810						
Cowlitz:								
Blueback salmon	20,000	700						
Chinook salmon	137,000	5,480						
Silver salmon	37,150	743						
Steelhead salmon	70,850	1,717						
Sturgeon							255,263	2,871
Total	265,000	8,640					255,263	2,871
Jefferson:								
Cultus-cod							21,000	570
Halibut							50,000	1,000
Herring					17,000	$340		
Silver salmon							7,000	350
Smelt					20,000	600		
Total					37,000	940	78,000	1,920
King:								
Chinook salmon	56,270	1,656			37,523	1,030		
Dog salmon	350,481	3,158			395,004	2,741		
Flounders					49,000	980		
Herring	52,500	788			17,500	262		
Perch					44,000	880		
Silver salmon	311,214	7,426			408,486	6,526		
Smelt					66,000	1,650		
Steelhead salmon	107,787	2,156			64,673	1,293		
Crabs					38,400	1,600		
Total	878,252	15,184			1,120,586	16,962		

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Klickitat:								
Blueback salmon	11,480	$230	12,000	$240				
Chinook salmon	8,000	240	5,000	150				
Steelhead salmon	4,600	50	3,000	30				
Total	24,080	520	20,000	420				
Pacific:								
Blueback salmon	85	2	198,485	3,969	14,945	$299		
Chinook salmon	266,825	8,005	1,778,650	53,360	74,500	2,237		
Shad			26,1[illegible]5	2,090				
Steelhead salmon	1,310	13	411,120	4,110				
Total	268,220	8,020	2,414,380	63,529	89,445	2,536		
Pierce:								
Chinook salmon			7,500	225	30,890	927		
Cultus-cod							115,000	$2,300
Dog salmon			27,761	277	75,727	757		
Flounders					85,000	1,275		
Halibut							3,000	90
Herring					170,000	1,700		
Rockfish							45,000	1,350
Shad			8,725	698	512	26		
Silver salmon			97,400	2,168	260,722	5,646		
Smelt					150,000	2,250		
Trout, black-spotted							15,000	2,700
Trout, salmon					15,000	450		
Crabs					10,000	300		
Shrimp					1,475	295		
Total			141,386	3,368	799,326	13,026	178,000	6,440
San Juan:								
Herring					150,000	1,500		
Skamania:								
Blueback salmon	10,000	200						
Chinook salmon	4,000	120						
Steelhead salmon	6,000	60						
Total	20,000	380						
Wahkiakum:								
Blueback salmon	1,105	22	1,515	30	56,515	1,126		
Chinook salmon	4,916,850	151,302	90,725	2,721	1,269,225	39,165		
Shad			8,725	698	80	7		
Steelhead salmon	138,440	1,384	29,790	298	367,010	3,669		
Total	5,056,395	152,708	130,755	3,747	1,692,830	43,967		
A[illegible]counties:								
Blueback salmon	128,590	2,884	212,000	4,239	71,460	1,425		
Chinook salmon	5,497,945	169,698	1,881,875	56,456	1,412,138	43,350		
Cultus-cod							256,000	5,220
Dog salmon	350,481	3,158	27,761	277	470,731	3,498	63,800	1,275
Flounders					134,000	2,255		
Halibut							333,000	5,290
Herring	52,500	788			354,500	3,802		
Perch					44,000	880		
Rockfish							110,000	3,075
Shad			43,575	3,486	592	33		
Silver salmon	498,364	11,919	97,400	2,168	669,208	12,172	103,200	3,350
Smelt					236,000	4,500		
Steelhead salmon	334,987	5,440	443,910	4,438	431,683	4,962		
Sturgeon							255,263	2,871
Trout, black-spotted							15,000	2,700
Trout, salmon					15,000	450		
Crabs					48,400	1,900		
Shrimp					1,475	295		
Grand total	6,862,867	193,887	2,706,521	71,064	3,889,187	79,531	1,136,263	23,781

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1890—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales								$600
Clarke:								
Blueback salmon	66,250	$1,325						
Chinook salmon	41,300	1,239						
Steelhead salmon	18,680	187						
Total	126,230	2,751						
King:								
Frogs			10,813	$4,325				
Clams					204,000	$1,700		
Total			10,813	4,325	204,000	1,700		
Klickitat:								
Blueback salmon	295,470	8,864	38,585	579				
Chinook salmon	143,342	4,300	56,068	841				
Silver salmon	10,500	210	31,500	472				
Steelhead salmon	96,250	1,443	14,025	210				
Total	545,562	14,817	140,178	2,102				
Mason:								
Oysters					1,524,000	38,100		
Pacific:								
Oysters					6,898,200	100,598		
Pierce:								
Clams					420,000	3,500		
Oysters					390,000	7,312		
Dogfish oil							30,000	1,400
Total					810,000	10,812	30,000	1,400
Skamania:								
Blueback salmon	674,745	20,242						
Chinook salmon	514,675	15,440						
Steelhead salmon	23,080	692						
Total	1,212,500	36,374						
Thurston:								
Oysters					76,800	1,920		
All counties:								
Blueback salmon	1,036,465	30,431	38,585	579				
Chinook salmon	699,317	20,979	56,068	841				
Silver salmon	10,500	210	31,500	472				
Steelhead salmon	138,010	2,322	14,025	210				
Frogs			10,813	4,325				
Clams					624,000	5,200		
Oysters					8,889,000	147,930		
Dogfish oil							30,000	1,400
Whales								600
Grand total	1,884,292	53,942	150,991	6,427	9,513,000	153,130	30,000	2,000

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	60,000	$1,500						
Silver salmon	130,000	3,150						
Total	190,000	4,650						
Clallam:								
Cultus-cod							115,000	$2,275
Flounders					8,150	$103		
Halibut							315,000	5,350
Herring					15,000	150		
Dog salmon					8,370	125	46,770	935
Humpback salmon							37,880	757
Rockfish							100,000	2,775
Silver salmon					21,630	475	82,350	2,088
Total					53,150	913	697,000	14,780
Clarke:								
Blueback salmon	48,000	1,680						
Chinook salmon	21,000	840						
Steelhead salmon	5,000	125						
Total	74,000	2,645						
Cowlitz:								
Blueback salmon	12,000	420						
Chinook salmon	82,500	3,300						
Silver salmon	53,400	1,068						
Steelhead salmon	68,600	1,537						
Sturgeon							503,327	5,468
Total	216,500	6,325					503,327	5,468
Jefferson:								
Cultus-cod							14,000	420
Halibut							60,000	1,200
Herring	16,000	320						
Silver salmon							6,500	325
Smelt	22,000	660						
Total	38,000	980					80,500	1,945
King:								
Chinook salmon	75,580	2,055			70,483	1,475		
Dog salmon	411,199	3,667			450,273	3,165		
Flounders					70,000	1,400		
Herring	76,500	1,148			25,500	382		
Humpback salmon	154,854	2,322			464,562	6,966		
Perch					60,000	1,500		
Silver salmon	387,511	8,948			543,570	8,272		
Smelt					75,000	1,875		
Steelhead salmon	130,825	2,617			78,495	1,570		
Crabs					57,600	2,400		
Total	1,236,469	20,757			1,895,483	29,005		
Klickitat:								
Blueback salmon	11,400	342	12,000	$360				
Chinook salmon	4,000	120	3,000	90				
Steelhead salmon	5,100	153	5,000	150				
Total	20,500	615	20,000	600				
Pacific:								
Blueback salmon	105	2	248,840	4,976	2,805	56		
Chinook salmon	1,222,075	41,310	2,337,600	93,504	43,625	1,745		
Shad			42,180	2,531				
Silver salmon	137,060	1,377	305,340	3,353				
Steelhead salmon	27,075	406	432,304	6,051	5,330	80		
Total	1,386,915	43,095	3,366,264	110,415	51,760	1,881		

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Counties and species.	Gill nets.		Pound and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon			19,012	$570	37,600	$1,128		
Cultus-cod							130,000	$2,000
Dog salmon			26,500	265	64,939	649		
Flounders					115,000	1,725		
Halibut							3,500	105
Herring					175,000	1,750		
Humpback salmon			25,416	508	70,229	1,404		
Rockfish							50,000	1,500
Shad			612	37	400	20		
Silver salmon			95,300	1,916	261,004	5,220		
Smelt					175,000	2,625		
Trout, black-spotted							16,000	2,880
Trout, salmon					18,000	540		
Crabs					12,000	360		
Shrimp					1,800	450		
Total			166,840	3,296	930,972	15,871	199,500	7,085
San Juan:								
Herring					200,000	2,000		
Skamania:								
Blueback salmon	4,835	$145						
Chinook salmon	2,500	100						
Steelhead salmon	4,000	60						
Total	11,335	305						
Wahkiakum:								
Blueback salmon					38,820	1,165		
Chinook salmon	4,279,900	166,168	42,800	1,712	1,171,275	35,139		
Shad			12,208	732	4,500	270		
Steelhead salmon	146,640	2,199	12,170	182	269,360	5,387		
Total	4,426,540	168,367	67,178	2,626	1,483,955	41,961		
Whatcom:								
Blueback salmon			512,260	10,977				
Silver salmon	14,625	156			72,750	776		
Total	14,625	156	512,260	10,977	72,750	776		
All counties:								
Blueback salmon	76,340	2,589	773,100	16,313	41,625	1,221		
Chinook salmon	5,747,555	215,393	2,402,412	95,876	1,322,983	39,487		
Cultus-cod							259,000	5,295
Dog salmon	411,199	3,667	26,500	265	523,582	3,939	46,770	935
Flounders					193,150	3,288		
Halibut							378,500	6,655
Herring	92,500	1,468			415,500	4,282		
Humpback salmon	154,854	2,322	25,416	508	534,791	8,370	37,880	757
Perch					60,000	1,500		
Rockfish							150,000	4,275
Shad			55,000	3,300	4,900	290		
Silver salmon	723,196	14,699	400,640	5,269	898,954	14,743	88,850	3,013
Smelt	22,000	660			250,000	4,500		
Steelhead salmon	387,240	7,097	449,474	6,383	353,185	7,037		
Sturgeon							503,327	5,468
Trout, black-spotted							16,000	2,880
Trout, salmon					18,000	540		
Crabs					69,600	2,760		
Shrimp					1,800	450		
Grand total	7,614,884	247,895	4,132,542	127,914	4,688,070	92,407	1,480,327	29,278

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1891—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales								$2,400
Clarke:								
Blueback salmon	5,830	$175						
Chinook salmon	14,500	435						
Steelhead salmon	4,300	129						
Total	24,630	739						
King:								
Frogs			8,413	$3,365				
Clams					270,000	$2,250		
Total			8,413	3,365	270,000	2,250		
Klickitat:								
Blueback salmon	63,455	1,904	60,918	914				
Chinook salmon	56,665	1,700	10,183	151				
Silver salmon	19,110	573	29,820	447				
Steelhead salmon	48,050	1,441	20,164	302				
Total	187,280	5,618	121,085	1,814				
Mason:								
Oysters					1,560,000	39,000		
Pacific:								
Oysters					7,890,480	105,206		
Pierce:								
Clams					466,800	3,890		
Oysters					420,000	7,875		
Dogfish oil							33,750	1,575
Total					886,800	11,765	33,750	1,575
Skamania:								
Blueback salmon	114,090	3,423						
Chinook salmon	169,375	5,081						
Steelhead salmon	63,010	1,890						
Total	346,475	10,394						
Thurston:								
Oysters					115,200	2,880		
Whatcom:								
Blueback salmon			10,500	225				
Silver salmon			15,750	168				
Total			26,250	393				
All counties:								
Blueback salmon	183,375	5,502	71,418	1,139				
Chinook salmon	240,540	7,216	10,183	151				
Silver salmon	19,110	573	45,570	615				
Steelhead salmon	115,360	3,460	20,164	302				
Frogs			8,413	3,365				
Clams					736,800	6,140		
Oysters					9,985,680	154,961		
Dogfish oil							33,750	1,575
Whales								2,400
Grand total	558,385	16,751	155,748	5,572	10,722,480	161,101	33,750	3,975

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	290,054	$5,283	90,684	$1,760				
Dog salmon	219,860	1,099	102,140	511				
Silver salmon	563,608	10,048	187,869	3,349				
Sturgeon			38,000	190				
Total	1,082,522	16,430	427,693	5,810				
Clallam:								
Cultus-cod							117,000	$2,305
Flounders					12,400	$248		
Halibut							354,000	6,035
Herring					25,000	250		
Dog salmon					17,000	325	74,000	1,440
Rockfish							123,000	3,315
Silver salmon					38,310	895	111,000	3,210
Total					93,400	1,718	779,000	16,305
Clarke:								
[illegible]back salmon	68,000	2,040						
[illegible]ook salmon	27,000	1,080						
[illegible]head salmon	6,000	90						
Total	101,000	3,210						
Cowlitz:								
Blueback salmon	15,000	450						
Chinook salmon	110,000	4,400						
Silver salmon	27,600	552						
Steelhead salmon	49,400	863						
Sturgeon							505,623	5,567
Total	202,000	6,265					505,623	5,567
Jefferson:								
Cultus-cod							37,000	860
Halibut							90,000	1,800
Herring					12,000	240		
Silver salmon							5,000	250
Smelt					23,000	690		
Total					35,000	930	132,000	2,910
King:								
Chinook salmon	69,917	2,040	32,018	962	43,449	1,134		
Dog salmon	643,110	4,780	164,790	1,640	1,108,320	6,142		
Flounders					72,160	1,443		
Herring	78,834	1,183			26,278	394		
Perch					65,140	1,303		
Silver salmon	447,932	9,585	128,230	3,847	692,452	9,219		
Smelt					98,726	2,468		
Steelhead salmon	130,570	2,611	62,322	1,246	68,250	1,365		
Crabs					60,000	2,500		
Total	1,370,363	20,199	387,360	7,695	2,234,775	25,968		
Klickitat:								
Blueback salmon	12,000	360	14,000	280				
Chinook salmon	3,000	90	2,000	80				
Silver salmon	5,000	150						
Steelhead salmon	5,000	150	4,000	60				
Total	25,000	750	20,000	420				
Pacific:								
Blueback salmon	105	3	934,885	18,697	8,985	270		
Chinook salmon	1,097,175	43,387	2,294,300	90,772	65,300	1,959		
Dog salmon	67,666	338	135,334	677				
Shad			62,400	1,872				
Silver salmon	252,000	2,520	504,000	5,040				
Steelhead salmon	9,710	146	765,980	11,489	14,440	289		
Crabs	9,000	750						
Total	1,435,656	47,144	4,696,899	128,547	88,725	2,518		

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Counties and species.	Gill nets.		Pound nets and trap nets.		Seines.		Lines.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon			45,600	$1,458	91,800	$2,754		
Cultus-cod							125,000	$2,500
Dog salmon			55,280	553	110,600	1,106		
Flounders					100,000	1,500		
Halibut							3,000	90
Herring					225,000	2,250		
Rockfish							40,000	1,200
Shad			500	25	600	30		
Silver salmon			165,560	3,311	227,780	4,555		
Smelt					200,000	3,000		
Trout, black-spotted							20,000	3,600
Trout, salmon					20,000	600		
Crabs					10,000	300		
Shrimp					2,000	500		
Total			269,940	5,347	987,780	16,595	188,000	7,390
San Juan:								
Herring					250,000	2,500		
Skamania:								
Blueback salmon	15,000	$450						
Chinook salmon	4,000	160						
Steelhead salmon	5,000	75						
Total	24,000	685						
Wahkiakum:								
Blueback salmon					366,000	10,986		
Chincok salmon	4,499,500	174,550	500	20	624,350	18,728		
Shad			17,850	536	22,000	720		
Steelhead salmon	283,570	4,254	1,500	150	333,990	6,680		
Total	4,783,070	178,804	19,850	706	1,346,240	37,114		
Whatcom:								
Blueback salmon			260,225	5,576				
Dog salmon	83,475	477			500,850	2,862		
Silver salmon	21,000	224			127,950	1,365		
Total	104,475	701	260,225	5,576	628,800	4,227		
All counties:								
Blueback salmon	110,105	3,303	1,209,110	24,553	374,985	11,256		
Chinook salmon	6,109,646	230,990	2,477,102	95,052	824,799	24,575		
Cultus-cod							279,000	5,665
Dog salmon	1,014,111	6,694	457,544	3,381	1,737,460	10,435	74,000	1,440
Flounders					184,560	3,191		
Herring	78,834	1,183			538,278	5,634		
Halibut							447,000	7,925
Perch					65,140	1,303		
Rockfish							163,000	4,715
Shad			80,750	2,433	22,600	750		
Silver salmon	1,317,140	23,079	985,659	15,547	1,986,492	16,034	116,000	3,460
Smelt					321,726	6,158		
Steelhead salmon	489,250	8,189	833,802	12,945	416,680	8,334		
Sturgeon			38,000	190			505,623	5,567
Trout, black-spotted							20,000	3,600
Trout, salmon					20,000	600		
Crabs	9,000	750			70,000	2,800		
Shrimp					2,000	500		
Grand total	9,128,086	273,188	6,081,967	154,101	5,664,720	91,570	1,604,623	32,172

Table showing by counties, species, and apparatus of capture the yield of the shore fisheries of Washington in 1892—Continued.

Counties and species.	Wheels.		Minor nets.		Tongs and hoes.		Spears, guns, etc.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Clallam:								
Whales								$600
Fur-seal pelts								2,700
Total								3,300
Clarke:								
Blueback salmon	94,500	$2,835						
Chinook salmon	38,825	1,165						
Steelhead salmon	29,400	882						
Total	162,725	4,882						
King:								
Clams					300,000	$2,500		
Frogs			13,125	$5,250				
Total			13,125	5,250	300,000	2,500		
Klickitat:								
Blueback salmon	217,052	6,512	76,900	1,154				
Chinook salmon	125,405	3,762	14,450	217				
Silver salmon	34,104	1,023	33,950	510				
Steelhead salmon	242,970	4,289	28,900	434				
Total	619,531	15,586	154,200	2,315				
Mason:								
Oysters					1,576,800	32,850		
Pacific:								
Oysters					7,588,440	101,179		
Pierce:								
Clams					384,000	3,200		
Oysters					598,200	11,216		
Dogfish oil							37,500	1,750
Total					982,200	14,416	37,500	1,750
Skamania:								
Blueback salmon	417,280	12,518						
Chinook salmon	253,400	7,602						
Steelhead salmon	378,190	8,346						
Total	1,048,870	28,466						
Thurston:								
Oysters					132,000	2,750		
Whatcom:								
Blueback salmon			14,000	300				
Dog salmon			21,000	120				
Silver salmon			15,000	160				
Total			50,000	580				
All counties:								
Blueback salmon	728,832	21,865	90,900	1,454				
Chinook salmon	417,630	12,529	14,450	217				
Dog salmon			21,000	120				
Silver salmon	34,104	1,023	48,950	670				
Steelhead salmon	650,560	13,517	28,900	434				
Frogs			13,125	5,250				
Clams					684,000	5,700		
Oysters					9,895,440	147,995		
Dogfish oil							37,500	1,750
Whales								600
Fur-seal pelts								2,700
Grand total	1,831,126	48,934	217,325	8,145	10,579,440	153,695	37,500	5,050

Table showing by counties and species the yield of the shore fisheries of Washington—Continued.

SUMMARY.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Chehalis:								
Chinook salmon	1,085,075	$21,701	75,000	$1,875	60,000	$1,500	398,738	$7,043
Dog salmon							322,000	1,610
Silver salmon	1,282,200	32,044	150,000	3,750	130,000	3,150	751,477	13,397
Sturgeon							38,000	190
Total	2,367,275	53,745	225,000	5,625	190,000	4,650	1,510,215	22,240
Clallam:								
Cultus-cod	130,000	2,500	120,000	2,350	115,000	2,275	117,000	2,305
Flounders					8,150	163	12,400	248
Halibut	300,000	4,500	280,000	4,200	315,000	5,350	354,000	6,035
Herring					15,000	150	25,000	250
Dog salmon	47,210	965	63,800	1,275	55,140	1,060	91,690	1,765
Humpback salmon	39,350	810			37,880	757		
Rockfish	60,000	1,650	65,000	1,725	100,000	2,775	123,000	3,315
Silver salmon	86,440	2,095	96,200	3,000	103,980	3,163	149,310	4,105
Whales		800		600		2,400		600
Fur-seal pelts								2,700
Total	663,000	13,920	625,000	13,150	750,150	18,093	872,400	21,323
Clarke:								
Blueback salmon	51,750	1,737	152,170	3,055	53,830	1,855	162,500	4,875
Chinook salmon	30,200	1,310	75,300	2,259	35,500	2,275	65,825	2,245
Steelhead salmon	8,920	263	24,680	247	9,300	254	35,400	972
Total	90,870	3,310	252,150	5,561	98,630	3,384	263,725	8,092
Cowlitz:								
Blueback salmon	13,000	390	20,000	700	12,000	420	15,000	450
Chinook salmon	81,000	3,240	137,000	5,480	82,500	3,300	110,000	4,400
Silver salmon	26,675	667	37,150	743	53,400	1,068	27,600	552
Steelhead salmon	42,325	1,143	70,850	1,717	68,600	1,537	49,400	863
Sturgeon	218,985	2,300	255,263	2,871	503,327	5,468	505,623	5,567
Total	381,985	7,740	520,263	11,511	719,827	11,793	707,623	11,832
Jefferson:								
Cultus-cod	19,000	500	21,000	570	14,000	420	37,000	860
Halibut	41,000	820	50,000	1,000	60,000	1,200	90,000	1,800
Herring	15,000	300	17,000	340	16,000	320	12,000	240
Silver salmon	6,000	300	7,000	350	6,500	325	5,000	250
Smelt	25,000	750	20,000	600	22,000	660	23,000	690
Total	106,000	2,670	115,000	2,860	118,500	2,925	167,000	3,840
King:								
Chinook salmon	80,248	1,828	93,792	2,686	146,063	3,530	145,384	4,136
Dog salmon	289,247	2,415	745,485	5,899	861,472	6,832	1,916,220	12,562
Flounders	25,000	500	49,000	980	70,000	1,400	72,160	1,443
Herring	35,000	525	70,000	1,050	102,000	1,530	105,112	1,577
Humpback salmon	184,427	2,764			619,416	9,288		
Perch	23,000	460	44,000	880	60,000	1,500	65,140	1,303
Silver salmon	1,086,960	13,922	719,700	13,952	931,081	17,220	1,268,614	22,651
Smelt	33,000	825	66,008	1,650	75,000	1,875	98,726	2,468
Steelhead salmon	90,570	1,811	172,460	3,449	209,320	4,187	261,142	5,222
Crabs	14,400	600	38,400	1,600	57,600	2,400	60,000	2,500
Frogs	7,500	3,000	10,813	4,325	8,413	3,365	13,125	5,250
Clams	108,000	900	204,000	1,700	270,000	2,250	306,000	2,500
Total	1,977,352	29,550	2,213,651	38,171	3,410,365	55,377	4,305,623	61,612
Klickitat:								
Blueback salmon	172,817	5,898	357,535	9,913	147,773	3,520	319,952	8,306
Chinook salmon	112,925	3,667	212,410	5,531	73,848	2,061	144,855	4,149
Silver salmon	39,005	836	42,000	682	48,930	1,020	73,054	1,684
Steelhead salmon	10,870	326	117,875	1,733	78,314	2,046	280,870	4,933
Total	335,617	10,727	729,820	17,859	348,865	8,647	818,731	19,071
Mason:								
Oysters	1,500,000	37,500	1,524,000	38,100	1,560,000	39,000	1,576,800	32,850
Pacific:								
Blueback salmon	111,850	5,586	213,515	4,270	251,750	5,034	943,975	18,970
Chinook salmon	1,632,953	71,569	2,119,975	63,602	3,603,300	136,559	3,456,775	136,118
Dog salmon							203,000	1,015
Shad	14,125	1,412	26,125	2,090	42,186	2,531	62,400	1,872
Silver salmon	1,198,000	29,950			443,000	4,730	756,000	7,560
Steelhead salmon	251,520	7,544	412,430	4,123	464,709	6,537	790,130	11,924
Crabs							9,000	750
Oysters	5,609,400	81,804	6,898,200	100,598	7,890,480	105,206	7,588,440	101,179
Total	8,817,848	197,865	9,670,245	174,683	12,695,419	260,597	13,809,720	279,388

Table showing by counties and species the yield of the shore fisheries of Washington—Continued.

SUMMARY—Continued.

Counties and species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Pierce:								
Chinook salmon	15,980	$480	38,390	$1,152	56,612	$1,698	140,400	$4,212
Cultus-cod	105,000	2,100	115,000	2,300	130,000	2,600	125,000	2,500
Dog salmon	72,870	729	103,488	1,034	91,439	914	165,880	1,659
Flounders	80,000	1,200	85,000	1,275	115,000	1,725	100,000	1,500
Halibut	4,000	120	3,000	90	3,500	105	3,000	90
Herring	165,000	1,650	170,000	1,700	175,000	1,750	225,000	2,250
Humpback salmon	98,615	2,041	.....	.....	95,645	1,912	.....	.....
Rockfish	42,000	1,260	45,000	1,350	50,000	1,500	40,000	1,200
Shad	1,000	55	9,237	724	1,012	57	1,100	55
Silver salmon	287,535	6,250	358,122	7,814	356,304	7,136	393,340	7,866
Smelt	145,000	2,175	150,000	2,250	175,000	2,625	200,000	3,000
Trout, black-spotted	12,000	1,800	15,000	2,700	16,000	2,880	20,000	3,600
Trout, salmon	13,000	390	15,000	450	18,000	540	20,000	600
Crabs	8,000	240	10,000	300	12,000	360	10,000	300
Shrimp	1,500	300	1,475	295	1,800	450	2,000	500
Clams	330,000	2,750	420,000	3,500	466,800	3,890	384,000	3,200
Oysters	360,000	7,500	390,000	7,312	420,000	7,875	598,200	11,216
Dogfish oil	28,500	1,330	30,000	1,400	33,750	1,575	37,500	1,750
Total	1,770,000	32,370	1,958,712	35,646	2,217,862	39,592	2,465,420	45,498
San Juan:								
Herring	.....	.....	150,000	1,500	200,000	2,000	250,000	2,500
Skamania:								
Blueback salmon	133,315	5,443	684,745	20,442	118,925	3,568	432,280	12,968
Chinook salmon	99,275	4,001	518,675	15,560	171,875	5,181	257,400	7,762
Steelhead salmon	5,010	190	29,080	752	67,010	1,950	383,190	8,421
Total	237,600	9,634	1,232,500	36,754	357,810	10,699	1,072,870	29,151
Thurston:								
Oysters	78,000	1,800	76,800	1,920	115,200	2,880	132,0[illegible]	[illegible]
Wahkiakum:								
Blueback salmon	7,460	373	59,135	1,178	38,820	1,165	366,000	10,980
Chinook salmon	7,070,100	348,117	6,276,800	193,188	5,493,975	203,019	5,124,250	193,298
Shad	5,885	588	8,805	705	16,708	1,002	39,850	1,256
Steelhead salmon	553,590	16,607	535,240	5,351	428,170	7,768	619,060	11,084
Total	7,637,035	365,685	6,879,980	200,422	5,977,673	212,954	6,149,160	216,624
Whatcom:								
Blueback salmon	.....	.....	.....	.....	522,760	11,202	274,225	5,876
Dog salmon	.....	.....	.....	.....	.....	.....	605,325	3,459
Silver salmon	.....	.....	.....	.....	103,125	1,100	163,950	1,749
Total	.....	.....	.....	.....	625,885	12,302	1,043,500	11,084
All counties:								
Blueback salmon	490,192	19,427	1,487,100	39,558	1,145,858	26,764	2,513,932	62,431
Chinook salmon	10,207,756	455,913	9,547,343	291,333	9,723,673	358,123	9,843,627	363,363
Cultus-cod	254,000	5,100	256,000	5,220	259,000	5,295	279,000	5,665
Dog salmon	409,327	4,109	912,773	8,208	1,008,051	8,806	3,304,115	22,070
Flounders	105,000	1,700	134,000	2,255	193,150	3,288	184,560	3,191
Halibut	345,000	5,440	333,000	5,290	378,500	6,655	447,000	7,925
Herring	215,000	2,475	407,000	4,590	508,000	5,750	617,112	6,817
Humpback salmon	322,392	5,615	.....	.....	752,941	11,957	.....	.....
Perch	23,000	460	44,000	880	60,000	1,500	65,140	1,303
Rockfish	102,000	2,910	110,000	3,075	150,000	4,275	163,000	4,515
Shad	21,010	2,055	44,167	3,519	59,900	3,590	103,350	3,183
Silver salmon	4,012,815	86,664	1,410,172	30,291	2,176,320	38,912	3,588,345	59,813
Smelt	203,000	3,750	236,000	4,500	272,000	5,160	321,726	6,158
Steelhead salmon	962,805	27,884	1,362,615	17,372	1,325,423	24,279	2,419,192	43,419
Sturgeon	218,985	2,300	255,263	2,871	503,327	5,468	543,623	5,757
Trout, black-spotted	12,000	1,800	15,000	2,700	16,000	2,880	20,000	3,600
Trout, salmon	13,000	390	15,000	450	18,000	540	20,000	600
Fur-seal pelts	.....	.....	.....	.....	.....	.....	.....	2,700
Frogs	7,500	3,000	10,813	4,325	8,413	3,365	13,125	5,250
Clams	438,000	3,650	624,000	5,200	736,800	6,140	684,000	5,700
Crabs	22,400	840	48,400	1,900	69,600	2,760	79,000	3,550
Shrimp	1,500	300	1,475	295	1,800	450	2,000	500
Oysters	7,547,400	128,604	8,889,000	147,930	9,985,680	154,961	9,895,440	147,995
Whales	.....	800	.....	600	.....	2,400	.....	600
Dogfish oil	28,500	1,330	30,000	1,400	33,750	1,575	37,500	1,750
Grand total	25,902,582	766,516	26,173,121	583,762	29,386,186	684,893	35,144,737	767,855

Table showing by counties the extent of the salmon-canning industry of Washington in 1889, 1890, 1891, and 1892.

Counties and years.	No. of employees. (a)	Canneries.			Salmon utilized in canning.													
					Chinook.		Blueback.		Steelhead.		Silver.		Dog.		Humpback.		Total.	
		No.	Value.	Cash capital.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds	Value.	Pounds.	Value.
Chehalis:																		
1889	180	3	$34,000	$45,000	860,600	$19,560	.....	.....	.....	.....	1,282,200	$32,044	.....	.....	.....	.....	2,142,800	$51,604
1892	56	1	8,000	30,000	292,500	4,387	.....	.....	.....	.....	539,000	8,085	322,200	$1,610	.....	.....	1,153,500	14,082
King:																		
1889	138	2	22,500	40,000	28,728	274	.....	.....	.....	.....	904,344	8,542	129,531	623	272,194	$4,081	1,334,797	13,520
1890	85	1	15,000	20,000	6,268	60	.....	.....	.....	.....	369,600	3,450	307,860	1,466	.....	.....	683,728	4,976
1891	77	1	7,000	35,000	41,895	399	.....	.....	.....	.....	518,437	4,839	339,261	1,613	619,416	9,291	1,519,009	16,142
1892	73	1	7,000	35,000	11,098	106	.....	.....	.....	.....	745,500	6,958	1,260,000	6,000	.....	.....	2,016,598	13,064
Pacific:																		
1889	278	4	80,000	104,000	1,486,725	63,026	111,215	$2,224	395,220	$9,880	1,066,000	26,650	.....	.....	.....	.....	3,059,160	101,780
1890	183	2	55,000	81,000	2,090,075	75,242	204,620	4,092	517,980	5,179	.....	.....	.....	.....	.....	.....	2,812,675	84,513
1891	296	4	140,250	141,000	3,243,875	123,567	264,415	5,290	464,620	6,969	383,500	5,752	.....	.....	.....	.....	4,356,410	141,578
1892	298	4	141,500	183,000	3,296,700	131,868	460,135	9,203	1,018,290	15,273	756,000	7,560	203,000	1,015	.....	.....	5,734,125	164,919
Wahkiakum:																		
1889	356	7	184,500	239,000	7,114,649	350,241	7,460	373	553,590	12,383	.....	.....	.....	.....	.....	.....	7,675,699	362,997
1890	344	7	182,050	250,000	6,912,288	266,839	59,135	1,178	577,240	5,772	.....	.....	.....	.....	.....	.....	7,548,663	273,790
1891	328	7	177,500	207,000	5,586,143	216,335	38,820	776	478,170	7,171	.....	.....	.....	.....	.....	.....	6,103,133	224,282
1892	342	7	183,250	232,000	5,194,252	201,709	518,065	11,464	789,530	7,895	.....	.....	.....	.....	.....	.....	6,501,847	221,059
Whatcom:																		
1891	72	1	25,000	30,000	.....	.....	522,760	11,202	.....	.....	103,125	1,100	.....	.....	.....	.....	625,885	12,302
1892	82	1	30,000	40,000	.....	.....	274,225	5,876	.....	.....	163,950	1,749	605,325	3,459	.....	.....	1,043,500	11,084
Total:																		
1889	952	16	321,000	428,000	9,490,702	433,101	118,675	2,597	948,810	22,263	3,252,544	67,236	129,531	623	272,194	4,081	14,212,456	529,901
1890	612	10	252,050	351,000	9,008,631	342,141	263,755	5,270	1,095,220	10,952	369,600	3,450	307,860	1,466	.....	.....	11,045,066	363,279
1891	773	12	289,750	413,000	8,871,913	340,301	825,995	17,268	942,790	14,140	1,005,062	11,691	339,261	1,613	619,416	9,291	12,604,437	394,304
1892	851	13	369,750	520,000	8,794,550	338,061	1,252,425	26,543	1,807,820	23,168	2,204,450	24,352	2,390,325	12,084	.....	.....	16,449,570	424,208

a Included in the figures for Pacific County are 100 persons in 1889, 40 in 1891, and 45 in 1892 who were employed in salmon canning at Shoalwater (Willapa) Bay after the close of the season on the Columbia River. They have been credited to the Columbia River in the regular statistics of persons employed.

Table showing by counties the extent of the salmon canning industry of Washington in 1889, 1890, 1891, and 1892. Continued.

Counties and years.	Cases of salmon packed.											
	Chinook.		Blueback.		Steelhead.		Silver.		Dog.		Humpback.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Chehalis:														
1889	14,310	$57,240	.....	.....	.....	.....	53,425	$106,850	.....	.....	.....	.....	67,735	$164,090
1892	4,875	19,500	.....	.....	.....	.....	22,458	44,916	5,370	$5,370	.....	.....	32,703	69,786
King:														
1889	478	1,912	.....	.....	.....	.....	37,681	75,362	2,155	2,155	4,536	$4,536	44,850	84,015
1890	104	416	.....	.....	.....	.....	15,400	30,800	5,131	5,131	.....	.....	20,635	36,347
1891	699	2,796	.....	.....	.....	.....	21,601	43,202	5,656	5,656	10,327	10,327	38,283	61,981
1892	185	740	.....	.....	.....	.....	31,062	62,124	10,000	10,000	.....	.....	41,247	72,864
Pacific:														
1889	24,788	99,152	1,853	3,706	6,587	19,761	44,400	88,800	.....	.....	.....	.....	77,628	211,419
1890	34,835	139,340	3,410	6,820	8,633	25,899	21,582	43,164	.....	.....	.....	.....	68,460	215,223
1891	54,063	216,252	4,410	8,820	7,743	23,229	15,979	31,958	9,583	9,583	.....	.....	91,778	289,842
1892	54,945	219,780	7,669	15,338	16,971	50,913	31,500	63,000	5,075	5,075	.....	.....	116,160	354,106
Wahkiakum:														
1889	118,577	474,308	124	248	9,226	27,678	22,983	45,966	.....	.....	.....	.....	150,910	548,200
1890	115,205	460,820	985	1,970	9,624	28,872	24,052	48,104	.....	.....	.....	.....	149,866	539,766
1891	93,102	372,408	647	1,294	7,969	23,907	19,882	39,764	7,177	7,177	.....	.....	128,777	444,550
1892	86,571	346,284	8,634	17,268	13,159	39,477	32,819	65,638	7,895	7,895	.....	.....	149,078	476,562
Whatcom:														
1891	.....	.....	8,713	17,426	.....	.....	4,297	8,594	1,100	1,100	.....	.....	14,110	27,120
1892	.....	.....	4,571	9,142	.....	.....	6,831	13,662	1,749	1,749	.....	.....	13,151	24,553
Total:														
1889	158,153	632,612	1,977	3,954	15,813	47,439	158,489	316,978	2,155	2,155	4,536	4,536	341,123	1,007,724
1890	150,144	600,576	4,395	8,790	18,257	54,771	61,034	122,068	5,131	5,131	.....	.....	239,161	791,336
1891	147,864	591,456	13,770	27,540	15,712	47,136	61,759	123,518	23,516	23,516	10,327	10,327	272,948	823,493
1892	141,701	566,804	20,874	41,748	30,130	90,390	104,212	208,424	30,089	30,089	.....	.....	347,006	937,455

[a] Included in the figures for Pacific County are 100 persons in 1889, 40 in 1891, and 45 in 1892 who were employed in salmon canning at Shoalwater (Willapa) Bay after the close of the season on the Columbia River. They have been credited to the Columbia River in the regular statistics of persons employed.

Table showing by counties the extent of the salmon-canning industry of Washington in 1889, 1890, 1891, and 1892—Continued.

Counties and years.	Cases of salmon packed.													
	Chinook.		Blueback.		Steelhead.		Silver.		Dog.		Humpback.		Total.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Chehalis:														
1889	13,240	$66,590					18,310	$72,055					31,550	$138,645
1892	4,500	20,250					7,700	30,800	4,600	$16,100			16,800	67,150
King:														
1889	326	1,385					10,129	38,111	1,551	5,623	3,804	$14,396	15,810	59,515
1890	83	332					4,978	16,697	4,169	12,507			9,230	29,536
1891	517	2,068					6,448	21,093	4,188	12,564	7,647	24,435	18,800	60,160
1892	117	526					7,858	27,503	13,261	42,261			21,236	70,290
Pacific:														
1889	22,873	105,228	1,711	$6,844	5,646	$21,173	16,400	64,000					46,630	197,245
1890	32,155	147,522	3,148	13,728	7,969	29,883							43,272	191,133
1891	49,906	270,382	4,069	21,361	7,148	28,592	5,900	20,650					67,023	340,985
1892	49,950	274,725	7,079	36,589	15,666	62,664	10,800	43,200	2,900	8,700			86,395	425,878
Wahkiakum:														
1889	108,883	621,740	107	585	8,053	33,060							117,043	655,385
1890	107,035	616,641	846	4,482	8,248	32,992							116,129	654,115
1891	84,398	485,955	554	2,946	6,832	26,328							91,784	515,229
1892	79,686	458,818	8,362	42,533	11,279	44,976							99,327	546,327
Whatcom:														
1891			7,500	30,000			1,500	5,625					9,000	35,625
1892			4,000	16,000			2,350	9,400	8,650	28,545			15,000	53,945
Total:														
1889	145,322	794,943	1,818	7,429	13,699	54,233	44,839	174,166	1,551	5,623	3,804	14,396	211,033	1,050,790
1890	139,273	764,495	3,994	18,210	16,217	62,875	4,978	16,697	4,169	12,507			168,631	874,784
1891	134,821	758,405	12,123	54,307	13,980	54,920	13,848	47,368	4,188	12,564	7,647	24,435	186,607	951,999
1892	134,253	754,319	19,441	95,122	26,945	107,640	28,708	110,903	29,411	95,606			238,758	1,163,590

PACIFIC COUNTY.

This county is favorably located in respect to its fishing resources. One-half of its southern border is at the mouth of the Columbia River. Here are located over 300 pound nets used in the salmon fishery, many of which are owned in the county. Here, also, a large part of the salmon catch of the river is taken and distributed among the salmon canneries on both sides of the river. Here, at certain seasons, sardines, herring, shad, and other varieties not now utilized hold out inducements for the extension of the fisheries.

Just outside of the mouth of the Columbia, and off the shores of Pacific County, are good fishing-grounds on which may be found in more or less abundance, at all seasons of the year, rockfish, flounders, perch, halibut, and numerous other varieties of good food-fish, to all of which only slight attention is given.

At the northern end of the county Willapa Harbor is a good haven for shelter, and leading from it is Willapa Bay, formerly known as Shoalwater Bay, which is noted for its extensive beds of native oysters, as well as the abundance of salmon occurring during the fall.

The fisheries of Willapa Bay are confined to the salmon and oyster business, in addition to which a small quantity of crabs taken in the salmon nets are utilized.

The run of salmon was fair in 1889, light in 1890 and 1891, and the largest in many years in 1892. The fish in 1892 were also of larger size and better quality than the average of past years. Three canneries are located on the bay, but only one of them was packing during 1892. The low price of canned salmon and the light run in 1890 and 1891 were so discouraging to the canners that two of the canneries did not resume in 1892, and the only one packing was ill prepared for the large run, and was obliged to shut down in the height of the season, owing to lack of cans in which to pack. The first salmon to enter this bay are the chinooks, locally known as black salmon; they run from the last of July to the last of August, with some stragglers later. Silver salmon appear about the middle of August and drop off in September, to be followed by dog salmon and another run of silver salmon during the last of September or early in October. A few steelheads are found in November, but only a light run of them occurs before December, after which they are to be found more or less abundantly all winter.

The salmon catch is chiefly by pound nets, of which twelve were located on North River and three on Wilapa River, near their entrance to the bay. As showing the abundance of salmon in 1892, the catch of 1,700 salmon, of which 1,460 were silver salmon, at one lift of a single pound net may be recorded. Pound nets are put down in August, previous to which time the fishing in Willapa Bay is of small extent and for local use.

The prices paid the salmon fishermen during 1892 were 10 cents each for silver salmon, 25 cents each for chinook salmon, and 5 cents each for

dog salmon. During 1892 no arrangements had been made for salting the catch of salmon, and preparations for canning were based on the expectation of only a light run, as in the two previous years. At the date of closing, thousands of salmon were taken from the pound nets only to be refused at the cannery and then thrown away from want of salt and barrels in which to cure or tins in which to pack them; the fishing was consequently discontinued.

During December, 1892, the railroad reached Willapa Bay, its terminal being at South Bend on the Willapa River. The first house in South Bend is reported to have been built in 1889; in 1892 the town had a population of 2,000. With the advent of the railroad a cold-storage company was organized to engage extensively in the fresh-fish trade. Should the plans of the company be realized it would be of great advantage to the fishermen and would provide an outlet for any such abundance of salmon as was witnessed in 1892.

The growth of the salmon fishery of Willapa Bay from 1890 to 1892 was phenomenal. In 1890 the only salmon taken were for local use. In 1891 30,000 pounds of silver salmon were shipped fresh, in addition to the local consumption. In 1892 10,800 cases of silver salmon and 2,900 cases of dog salmon were canned, and 75,000 pounds of fresh chinook salmon were sent to market, the total catch of the 45 salmon fishermen being 1,034,000 pounds, valued at $10,075.

The oyster industry of Willapa Bay has its principal headquarters at Bay Center, though the business is important at Oysterville. In 1892 365 persons were employed, including 143 Indians; $47,735 was invested, and the value of the output was $101,179. Next to San Francisco Bay, the oyster industry of Willapa Bay is more important than elsewhere on the Pacific Coast.

Since the oyster beds in Willapa Bay were visited by the writer in 1889 they had suffered severe loss from numerous storms; at times the shoal waters of the bay would sweep the oysters from the beds, leaving them in rows, buried in the mud and grass of the bottom. Thousands of bushels of oysters were thus killed. With the increased care of the beds, the replanting of the small oysters and of shells, the great losses by storms have been overcome, and the quantity of oysters taken for market has been kept up to the average of late years. For years the business was carried on with little or no regard to the future interest of the beds, the chief and only aim of the fishermen seemingly being to take all the oysters possible during the time permitted, without cultivating or caring for the beds in any way. The decline in the native beds called attention to the necessity for preserving them from complete depletion, and measures were taken by the State with that end in view.

During the open season before cold weather the native oysters are gathered by hand at low tide, the beds being entirely exposed, and only the market oysters being taken. With the return of the tide the oystermen work from boats with tongs, and the catch under such circumstances is culled, all small oysters and old shells being returned to

the water. During the prevalence of cold weather rakes and shovels take the place of hand-picking at low tide, and the oysters are culled, as is done with those taken by means of tongs.

The oysters gathered at Bay Center are mostly marketed at San Francisco; those taken at Oysterville go to Portland, Oreg.

The quantity and value of the oyster output of the bay in 1889, 1890, 1891, and 1892 were as follows:

Location.	1889.		1890.		1891.		1892.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
Bay Center	80,490	$70,429	100,720	$88,130	118,268	$94,614	114,250	$91,400
Oysterville	13,000	11,375	14,250	12,468	13,240	10,592	12,224	9,779
Total	93,490	81,804	114,970	100,598	131,508	105,206	126,474	101,179

CHEHALIS COUNTY.

The fisheries of this county are located on the Chehalis River, mostly near its mouth, and in Grays Harbor. In addition to the commercial fishing which is there carried on, considerable quantities of fish are also taken by Indians belonging on the Quinaiult Reservation, who fish in the river of the same name for local consumption. Fishing in the Chehalis River is done by means of gill nets and pound nets, the only fish utilized being salmon and sturgeon. Ocean food-fish in great abundance and variety are found just outside the harbor. These, together with the salmon, sturgeon, trout, and other fish found in the river and bay, will doubtless lead to a marked development of the fisheries of this county within a short time.

During 1889 three canneries were located on the Chehalis River whose aggregate pack was 31,550 cases. The very large output of canned salmon in that year on the west coast resulted in such low prices that many canneries were kept idle during the next two years, among which were the three canneries on this river. The only fishing carried on during 1890 and 1891 was a limited amount of gill-net salmon fishing in the Chehalis, and the Indian fishing already alluded to.

In December, 1891, a branch of the Pacific Railroad was opened to Ocosta, near the entrance to Grays Harbor. The facilities for shipment thus furnished and the opening of a cannery the following year revived the business that for two years had been almost abandoned. A cold-storage company was organized which contemplated entering largely into the fresh-fish business and shipping to Atlantic cities by means of refrigerator cars. During the fall of 1892 the run of the several varieties of salmon was very good. Chinooks, locally known as black salmon, entered the river in limited numbers as early as August 10, and by the 15th they were quite abundant; their average weight was 24 pounds. Silver salmon were found from the last of September to the first of November, averaging 12 pounds in weight. There was a short run of dog salmon from October 10 to November 1, these fish

having an average weight of 12 pounds. There was also a small run of dog salmon in the river after November 1. Steelheads are found from November to the following March, but the closing of the canneries before the run begins had, prior to building the railroad, prevented their utilization. The prices received by the salmon fishermen in 1892 were 30 cents each for chinooks, 15 cents each for silver salmon, and 5 cents each for dog salmon. In 1892 there were 102 fishermen employed in the salmon fishery of the Chehalis River, 34 of whom came from the Columbia River after the close of the season on that stream. Of the capital employed, amounting to $52,285, $7,300 represented nets, boats, etc., brought from the Columbia. Fifty-eight Chinamen were employed as cannery hands. The aggregate catch of salmon on the Chehalis in 1892 was 1,472,215 pounds, with a value to the fishermen of $22,050. This quantity included salmon canned, used locally, and shipped fresh by express. During the years 1889 and 1892, when salmon canning was done on this river, the following quantities of the different kinds of salmon were packed:

Species.	1889.	1892.
	Cases.	*Cases.*
Chinooks	13,240	4,500
Silver	18,310	7,700
Dog		4,600
Total	31,550	16,800

Sturgeon have always been more or less abundant in the Chehalis River, but up to a recent date no value was attached to them, and those found in the pound nets were knocked in the head and thrown away. Direct rail communication soon brought buyers from Puget Sound, and no more sturgeon were discarded. In 1892 38,000 pounds of sturgeon incidentally taken in the pound nets were disposed of; the price received by the fishermen being one-half cent a pound gross weight.

A few fine shad are taken in the pound nets of Chehalis River, but no special fishing for shad is done at any time. No nets of any kind are used until the fall run of salmon begins, by which time the run of shad is probably nearly over. The few shad taken are eaten by the fishermen. Salmon trout are found plentifully in the Chehalis River, but are fished for only by sportsmen.

JEFFERSON COUNTY.

The fishing business of this county centers at Port Townsend. The many advantages which this point possesses for the carrying on of an extensive fishing industry have often been mentioned. The city has one of the best harbors on the Pacific coast. Many varieties of desirable food-fish are to be found almost at the city's docks. The halibut, cod, and other fish, which are found in abundance just within and outside the Strait of San Juan de Fuca, are much nearer to Port Townsend than to any other city or important shipping point. The fisheries have not reached that stage of development which was anticipated a few

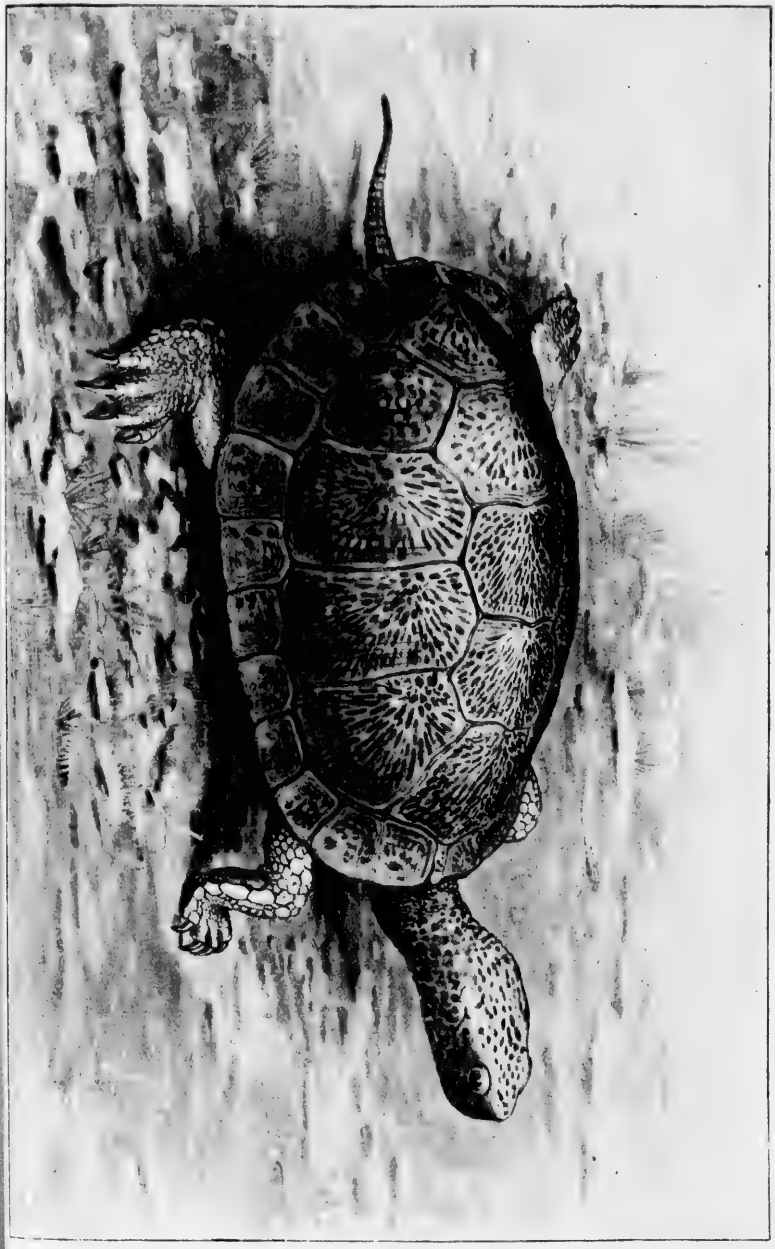
years ago, chiefly for the reason that the attempts to utilize the fine resources of the region have not been sufficiently extensive and enough capital has not been put into the business to demonstrate the success of the industry. The great depression in all kinds of business during the past few years had its effects here as elsewhere and prevented the introduction of new enterprises or the enlargement of those already in existence. There is little reason to doubt that in the near future the fishing business of this county will be of great importance. A number of small-sized sailboats using hand lines for cultus-cod and halibut furnish the city with an abundance of food-fish, the surplus catch being sent to the various ports on Puget Sound. This, at present, constitutes the extent of the fishing industry of the county, with the exception of a small amount of seine fishing for herring and smelt. The western end of this county, which borders on the Pacific Ocean, is mountainous and unsettled, and maintains no fisheries.

CLALLAM COUNTY.

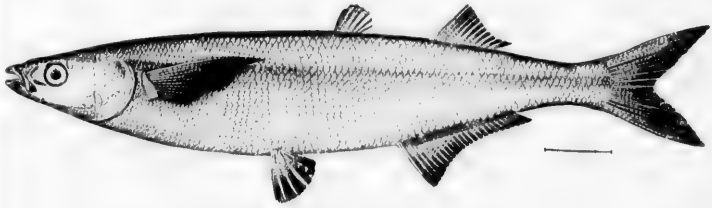
On the west this county abuts on the Pacific Ocean, while its northern border extends the entire length of the Strait of Fuca. It is therefore conveniently located with reference to the fishing-grounds, and it maintains fisheries of great and growing importance. The chief fishing centers are Neah Bay, Port Angeles, and Dungeness.

The fishery resources of this county are varied and valuable. The western section is mountainous and sparsely settled, and the fishing is confined to the taking of salmon by the Indians living along the banks of the Quillaiute River, which flows through their reservation. Small quantities of halibut and cod, with an occasional whale, are also taken by these Indians, who depend chiefly on these products for their winter supply of food. During the early spring months, for several weeks, the fur seal is found resting and feeding off the shores of this county before proceeding on its migration to Bering Sea. In the fall immense numbers of salmon come in from the ocean on their way up the strait and sound. Herring, anchovies, and smelt are also found in large bodies. The fishing banks and shoals in the immediate vicinity of the northwestern end of the county abound with fish, of which halibut, cultus-cod, rockfish, and black-cod are most sought after, while flounders, perch, dogfish, sharks, sculpins, and many other species are also abundant. The value of the fishery resources of this section has long been known, but up to the past few years the attempts made to utilize the resources have been limited.

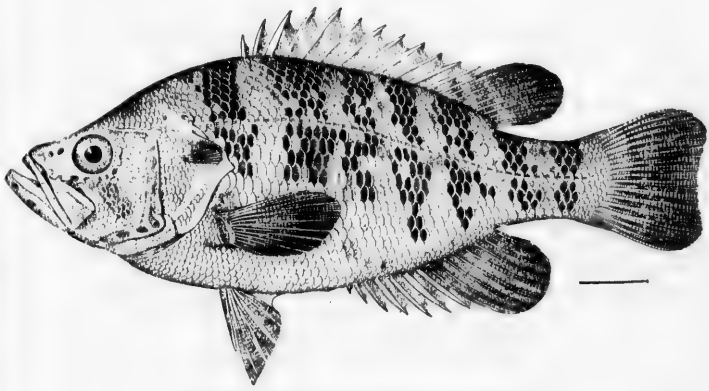
In 1889 these fisheries were investigated for the United States Fish Commission by the writer, who again visited the region in 1892. In the interim the attention of the fishermen had been especially directed to this section by the printed reports distributed by the Commission, and as a result the fishermen largely extended their operations in that vicinity, marketing their catch at the various cities on the strait and sound, whence the surplus was shipped to the interior.



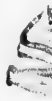
BOWHEAD OR ARCTIC WHALE (*Balæna mysticetus*).

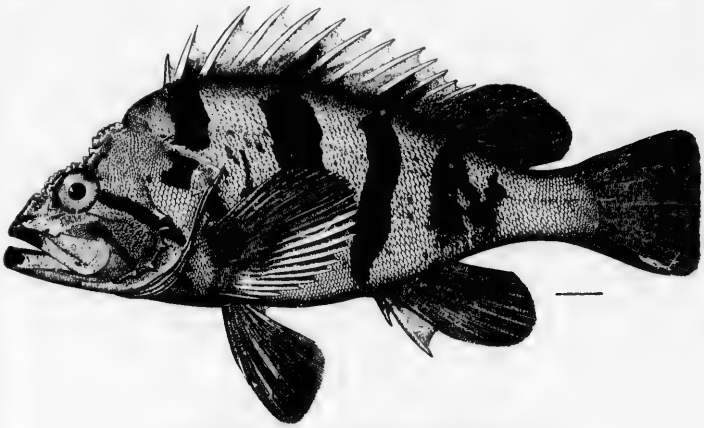


CALIFORNIA SMELT (*Atherinopsis californiensis*).

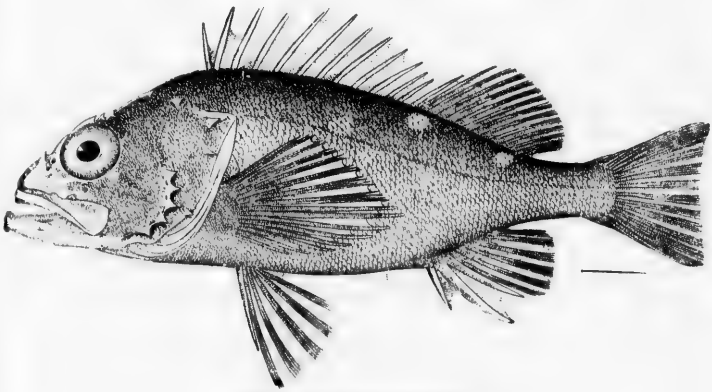


SACRAMENTO PERCH (*Archoplites interruptus*).

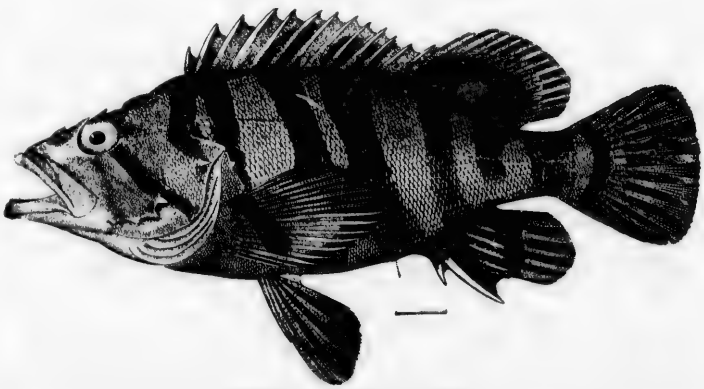




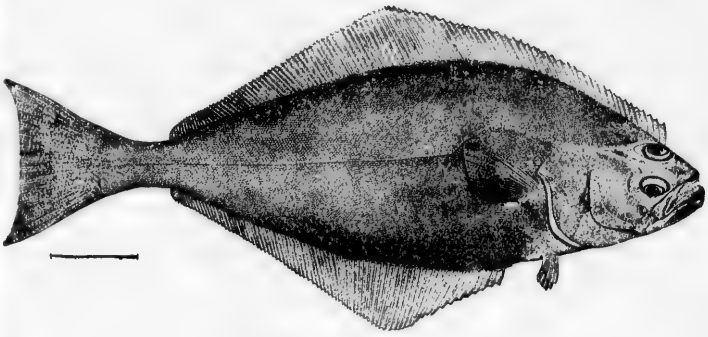
BLACK-BANDED ROCKFISH (*Sebastichthys nigrocinctus*).



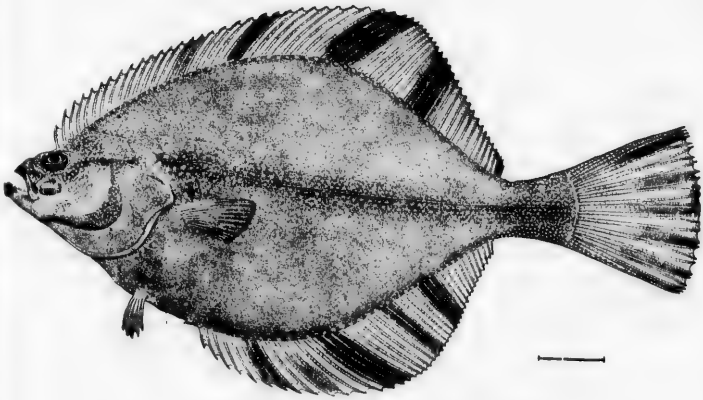
CORSAIR (*Sebastichthys rosaceus*).



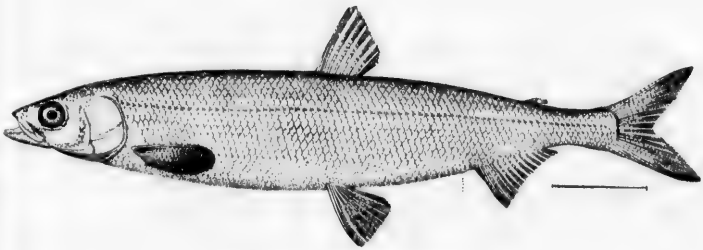
TREEFISH (*Sebastichthys serriceps*).



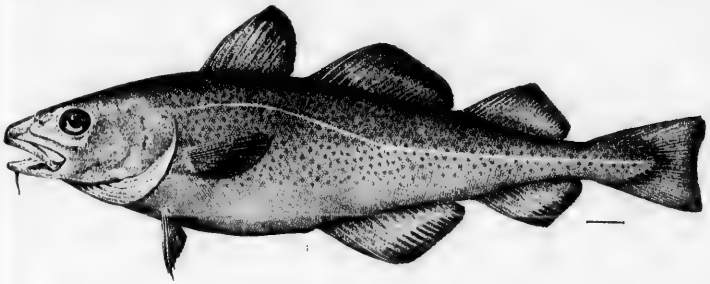
HALIBUT (*Hippoglossus hippoglossus*).



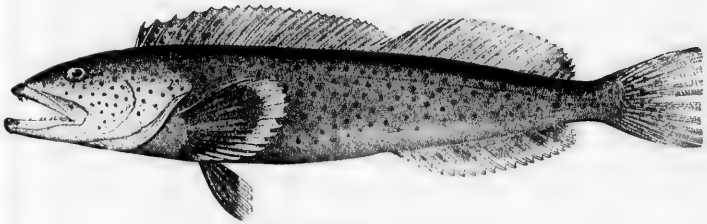
CALIFORNIA FLOUNDER (*Paralichthys stellatus*).



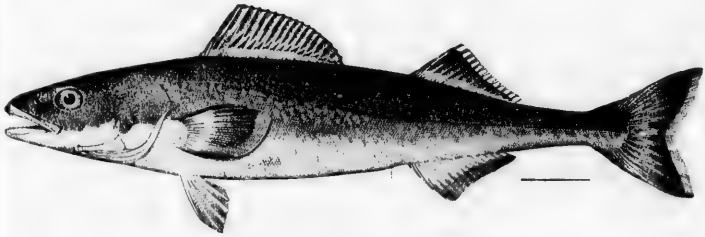
SURF SMELT (*Hypomesus pretiosus*).



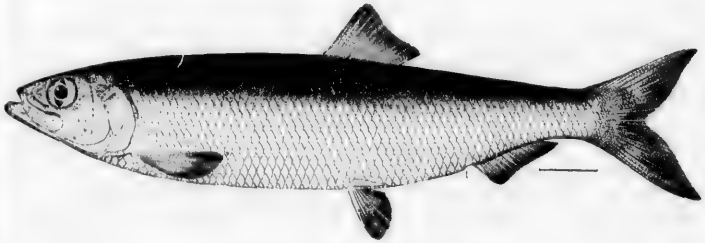
COD (*Gadus morrhua*).



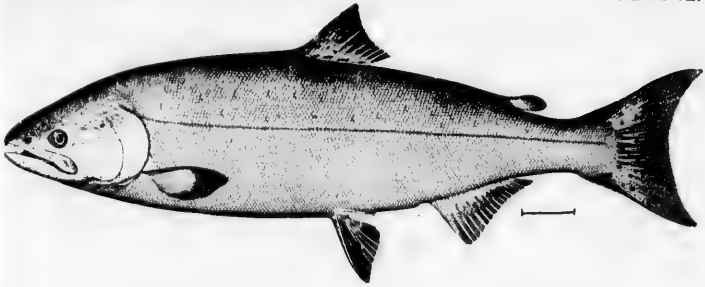
CULTUS-COD (*Ophiodon elongatus*).



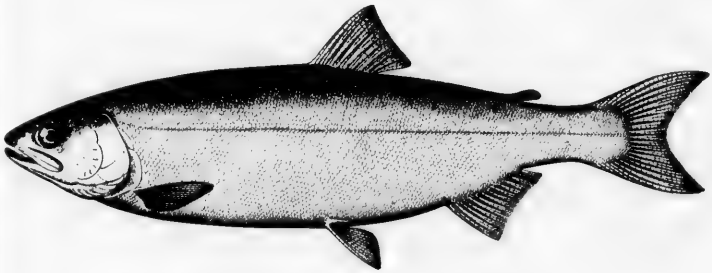
BLACK COD, OR BESHOWE (*Anoplopoma fimbria*).



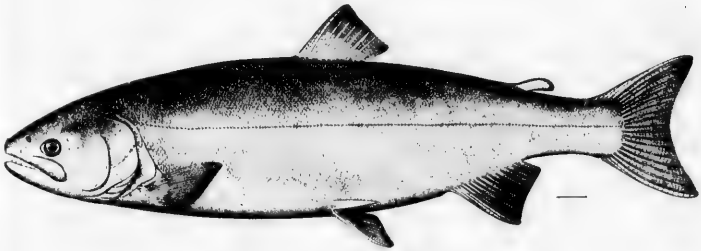
CALIFORNIA HERRING (*Clupea pallasi*).



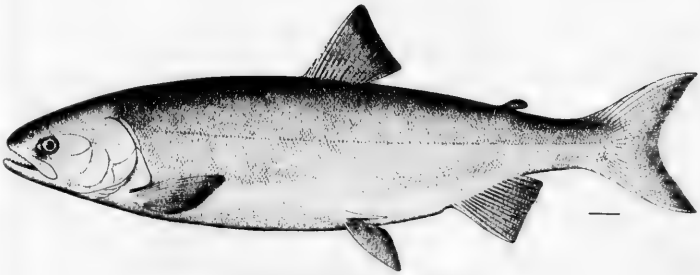
CHINOOK, KING, OR QUINNAT SALMON (*Oncorhynchus chouicha*).



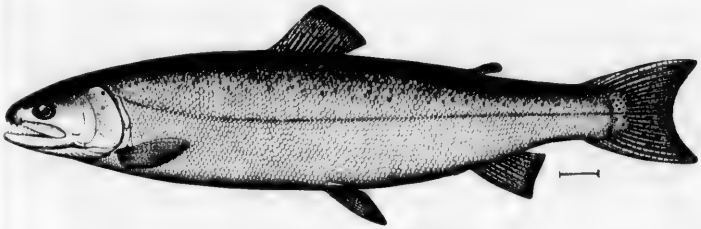
BLUEBACK OR RED SALMON (*Oncorhynchus nerka*).



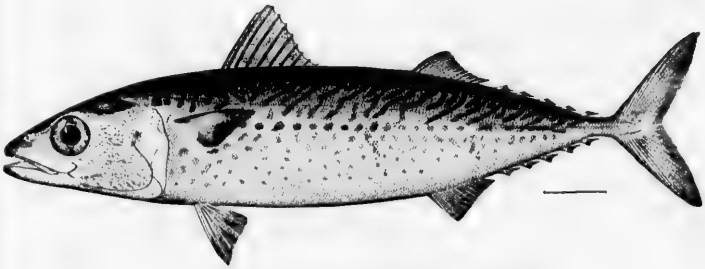
SILVER SALMON (*Oncorhynchus kisutch*).



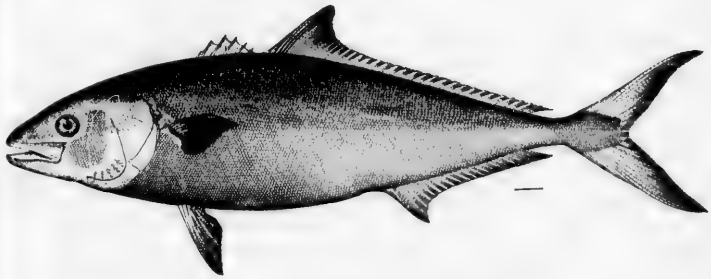
DOG SALMON (*Oncorhynchus keta*).



STEELHEAD (*Salmo gairdneri*).



BULL'S-EYE, OR CHUB MACKEREL (*Scomber colias*).



YELLOW TAIL, OR AMBER FISH (*Seriola dorsalis*).

Neah Bay.—The most important of the fishing communities of this county is Neah Bay, located on a reservation of the Makah Indians. Its nearness to the fishing-grounds makes it important as a harbor of refuge for fishermen of this entire region. In 1892 the Indians of Neah Bay numbered 442. They are industrious, self-supporting, quiet, and peaceable. The only work performed by them is connected with the fisheries, with the exception that during the hop-picking season men, women, and children are engaged in the hopyards of the white settlers of distant counties on or near Puget Sound. As reported in 1889, these Indians continue to procure the larger part of their food supply from the fishing-grounds of the Strait of Fuca and the adjacent ocean. No records are kept of their catch, and the amounts credited in the tables are based on careful estimates made at the agency.

Halibut are the favorite food-fish of the Indians. It is estimated at the agency that 280,000 pounds of this fish are used annually as food, in addition to the quantities sold. During 1892 a fishing firm located at Tacoma had a steamer employed in visiting the grounds near Cape Flattery and buying the catch from the Indians and the small sailing vessels of white men. It is the practice of the Indians to go into camp near Cape Flattery, where the fish are dressed and disposed of, those not sold fresh being taken home and smoked for future use. The home market thus created induced a largely increased catch.

The average daily catch of a halibut canoe is about 40 fish, having an average weight of 30 pounds, many of the fish taken being much heavier. The fishing season is from the middle of May to the middle of August, after which time three-fourths of the Indians leave for the hop vineyards. The halibut continue to be taken by the Indians with large, cumbersome wooden hooks made by them, which they prefer to the regular trade hooks used by white men. Halibut have been found in their usual abundance on the several fishing-grounds inside and outside the Strait of Fuca, although the larger catch is taken in the ocean. In rough and stormy weather fishing can be successfully carried on inside the mouth of the strait.

In 1892 new grounds were resorted to with excellent results. These were located from 25 to 40 miles southwest from Cape Flattery, and fishing was done in a depth of 75 fathoms. The Indians of this county pay but little attention to salmon. Their catch is only made by trolling a bone or spoon hook in the American waters of the Strait of Fuca. The principal portion of the salmon run, which occurs in the fall, is said to be on the British side of the strait, on reaching the inner extremity of which the fish turn into their customary routes, one body going into Puget Sound and one going northward into the Strait of Georgia destined for the Fraser River.

The pursuit of the fur seal is an important branch of the fisheries carried on by the Indians of Neah Bay. Small sailing vessels making their headquarters at that point are employed, several of which are owned by the Indians. In addition to the five sailing vessels used, in

1892 two others were bought and one was built in Seattle, too late for use during that year, all of which were to be put into this fishery in the following season.

Whales are pursued in large canoes that often go 15 or 20 miles from the shore. Only harpoons and lances are employed by the Indians in the whale fishery. After being killed, the whale is buoyed with large air bags made from the skins of sea lions and towed to the shore, where it is soon cut up and divided among the tribe. The blubber is cut into long, narrow strips and smoked for later use as one of their favorite articles of food.

The Indian, almost from infancy, is familiar with the canoe and its management. Very young children are often noticed dexterously manipulating the paddle in miniature canoes, and during youth the greater part of the life of the Indians is spent in their canoes. Strange to say, however, they do not feel safe on the deck of a vessel and seldom become good sailors. Even in the fur-seal fishery in which the Indians are the owners of the vessels employed, they never go any distance from land without having a white man aboard as navigator.

On returning from a fishing trip, the work of the Indian fisherman ceases until he again enters his canoe. The women meet the boats as soon as they land and attend to all the details connected with the care and preservation of the catch.

The canoes used by the Indians are made of red cedar, each from a single log. Canoes of different sizes are employed in the different fisheries, the standards being about as follows:

Dimensions and crews of Indian canoes, Neah Bay.

Fisheries in which employed.	Length.	Beam.	Crew.
	Feet.	*Feet.*	
Salmon	10	2½ to 3	1 to 2
Halibut	30 to 33	5	4 to 6
Whale	35 to 40	6 to 7	8
Fur seal	22	2½	2

The quantities and values of the products taken by the Indians of Neah Bay when fishing in their canoes were as follows, the figures applying to each of the years 1889 to 1892, inclusive. In addition to the products shown, the Indians of the same tribe and county living on the Quillaiute River took 300 fur seals, valued at $2,700, and a large amount of fish for local consumption of which no estimate can be given.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Halibut	300,000	$4,500	280,000	$4,200	290,000	$4,350	325,000	$4,875
Salmon	48,000	720	35,000	525	42,000	630	60,000	900
Cod (cultus and black)	100,000	1,500	90,000	1,350	85,000	1,275	87,000	1,305
Rockfish	10,000	150	15,000	225	15,000	225	25,000	375
Whales ..... number	(4)	800	(5)	600	(12)	2,400	(3)	600
Total	458,000	7,650	420,000	6,900	432,000	8,880	497,000	8,055

During 1889 and 1890 the sealing vessels of Neah Bay were seized for illegal sealing. In 1891 they took 815 seals, which were sold for $14,947, and in the following year 1,743 seals were killed, which brought $16,537. Three vessels were used in 1891 and five in 1892.

Port Angeles.— Prior to 1891 the fisheries of this port were confined to the operations of the Indians who live in the vicinity, but with the growth of the place during the years covered by this report more attention was given to developing the fishing business. A fishing and canning company under the name of the Port Angeles Packing Company was organized in 1892, a small cannery was built, and $10,000 was invested in the plant. The business was started too late in the season to do more than prepare for the ensuing year.

Two small vessels and several boats were engaged in the line and gill-net fisheries of this place, the catch, consisting of cultus-cod, halibut, and salmon, being marketed at Port Townsend or Seattle, when not sold locally. Fish of numerous varieties are fairly abundant at most seasons of the year, and the port has one of the best harbors in this region. It would therefore appear that with the further growth of the country the fisheries will receive more attention. In 1891 and 1892 the following quantities of fish were taken by the fishermen of Port Angeles and the immediate vicinity, including some Indian fishermen of Elwha Creek, located 6 miles west of Port Angeles:

Species.	1891.		1892.	
	Pounds.	Value.	Pounds.	Value.
Salmon	30,000	$600	46,000	$870
Halibut	25,000	1,000	34,000	1,180
Rockfish	35,000	1,050	50,000	1,480
Total	90,000	2,650	130,000	3,530

Dungeness.—Dungeness is a settlement composed for the most part of Indians, with only a few white families. The section is rough and mountainous, the harbor is shallow, and the conditions do not appear favorable for a great increase in the fisheries. Some little fishing is carried on from canoes, with hooks and lines, by Clallam Indian men and women. Any surplus catch, which is seldom made, finds a market at Seattle. The quantity taken varies but little from year to year, and in 1892 was about as follows:

Species.	Pounds.	Value.
Salmon	125,000	$3,750
Cultus cod and black-cod	30,000	1,000
Rockfish	50,000	1,500
Total	205,000	6,250

PIERCE COUNTY.

This county occupies the head of Puget Sound and has as its fishing center Tacoma, where most of the fishermen of the county reside and nearly all of the catch is marketed. With the recent growth of the city, the construction of a large cold-storage warehouse, and the investment of more capital in the industry, the outlook for the fisheries is very encouraging to the fishermen, and the results of the business present a considerable increase since the last report.

The principal fisheries are for salmon, carried on with pound nets; for cultus-cod, halibut, and rockfish, with lines; for flounders, herring, salmon, smelt, etc., with seines; and for oysters and clams, with tongs. The most important single products are oysters and silver salmon.

During 1892 a firm largely interested in the fisheries placed the steamer *Francis Cutting* in the business. This steamer was chiefly used as a transporter, making frequent trips from Tacoma to the several fishing banks of the sound and strait. The fishing season extended from May 1 to November 2, during which time about 500,000 pounds of halibut, 50,000 pounds of black-cod, and 75,000 pounds of cultus-cod were bought from the fishermen on the fishing-grounds, in addition to which the crew of the steamer caught about 20,000 pounds of halibut. On securing a fare the steamer returned to Tacoma, where the catch was placed in cold storage until needed. Fishing for halibut and the other fish is done by a small fleet of sailing vessels using hand lines.

Besides the halibut, black-cod, and cultus-cod brought in by the steamer, this firm handled considerable quantities of salmon, smelt, and sturgeon. After supplying the local demand, the surplus catch was packed in refrigerator cars and shipped to points east of the Rocky Mountains. The sturgeon handled came by rail from Grays Harbor the other fish were caught locally. This was probably the first year in which smelt were sent from the Pacific Coast to the East. The business of freezing and shipping fresh fish to eastern points promises a large increase in the near future. In 1891 one car, with 20,000 pounds of fresh fish, was sent east. In 1892, up to the middle of December, eleven cars, containing 297,369 pounds of fresh frozen fish, had been sent, while half a dozen car loads still remained in storage, to be forwarded later.

KING COUNTY.

The most important fishing center of this county is Seattle. The rapid growth in the population of Seattle, the building of a cold-storage warehouse, and the establishment of new fishing firms have led to a threefold increase in the fisheries of this county as compared with 1888.

The salmon canning business of Seattle and vicinity has fluctuated considerably in recent years. In 1889 three canneries were operated. During that season one was destroyed by fire, and the following year another shared the same fate, and the third was closed. The cannery destroyed in 1890 was burned during the packing season, but the business was continued in a hastily provided temporary building, the

packing for the season being necessarily much reduced, owing to the interruption. A large new cannery to replace the loss by fire was constructed, and was the only one in operation during the years 1891 and 1892. The most abundant salmon taken in this county is the dog salmon, which constitutes about five-twelfths of the catch. Silver salmon is next in abundance, representing one-third the catch, while steelhead and chinook salmon, respectively, comprise one-sixth and one-twelfth of the yield. In 1889 about three-eighths of the salmon catch of this county was obtained by means of pound nets, but in the later years the use of purse seines has been increasing and pound nets have been given up, so that in 1892 three-fourths of the catch was made with purse seines and one-fourth with gill nets.

A fleet of small-sized schooners, built for the fisheries during the years 1891 and 1892, at once inaugurated the halibut fishery, and their catch met with a ready sale at Seattle.

The business of shipping fish fresh in refrigerator cars is growing in importance. Shipments are as yet confined to fresh salmon and halibut consigned mostly to points east of the Missouri River. Each car carries from 12 to 18 tons of fish. In 1890 six carloads, comprising 195,250 pounds of fresh fish, were sent east from Seattle; the following year, nineteen carloads, aggregating 690,210 pounds, were sent east. Up to December 1, 1892, five carloads, equivalent to 121,550 pounds, had been sent, and it is probable that the shipments during the remainder of the year would make the aggregate for the season fully equal to that of 1891.

The Puget Sound and Alaska Commercial Company, of Seattle, was the pioneer of the cod-fishing business of that city. The firm began operations in February, 1892, and on March 5 of that year sent the schooner *Moonlight*, of 68 tons, with a crew of 17 men, on the first cod-fishing trip from Seattle. The vessel fished in Bering Sea and returned to Seattle on August 20 with 175,000 pounds of salt cod. Soon after being landed the fish were prepared in the usual manner as boneless cod and placed on the market. The success attending this first trip and the favorable reception accorded the prepared catch indicate that the future may see this business largely increased.

The pelagic fur-seal fishery has for many years received considerable attention in Seattle. Of late more vessels and larger craft have been engaged in this branch of the fisheries. During 1892 the vessels were very successful in taking seals and in receiving good prices in the London market, to which the entire catch was sent. At the close of 1892 vessels were being overhauled and made ready for an early start in January, 1893, for the distant sealing-grounds off the coast of Japan.

SKAGIT COUNTY.

This county is favorably located with reference to the fishing-grounds of the Strait of Fuca and Strait of Georgia, and will no doubt come into prominence with the further settlement of the section, but at the present time it maintains no local fisheries, and the only feature which

entitles it to mention is the offshore cod fishery carried on from Anacortes, in this county. During 1892 direct rail communication was established between Seattle and this county, with the water terminal at Anacortes. This town was one of many communities that the opening of the railroad brought into existence. Up to the date of the visit of the agent of the Fish Commission no attention had been given to the fisheries, with the exception of the cod fishery noted.

In 1891 Capt. J. A. Matteson, of Provincetown, Mass., brought to Anacortes the schooner *Lizzie Colby*, which had for a number of years been engaged in the Grand Banks cod fishery out of Provincetown. On the arrival of the vessel she was at once sent to the fishing banks in Bering Sea. Although the season was late when fishing began and the operations were continued only twenty days, 85,000 pounds of codfish were taken and brought to Anacortes. On March 17, 1892, this pioneer vessel in the cod fishery of Washington sailed from Anacortes on her second trip to Bristol Bay, Alaska, returning August 30 with 364,000 pounds of codfish, which were caught in three months' fishing. On the return of the vessel the cargo was stored under pickle in tanks until needed. As occasion requires, the fish are dried on outdoor flakes, and prepared for market as boneless codfish. The fish are sold in Seattle, Portland, and other cities of the west coast, and one car load was sent to Boston, Mass.

WHATCOM COUNTY.

This is the most northern county of the Pacific Coast of the United States. It lies at the southern entrance to the Gulf of Georgia and just northeast of the Strait of Fuca, and is of considerable importance in connection with the fisheries. Salmon on their way to the Fraser River pass the shores of this county, off which they are usually found about a month earlier than they are in the Fraser. The fisheries are centered at Point Roberts, a military reservation. Numerous varieties of fish are here found, but only salmon at the present time have any commercial importance. Previous to the establishment of a salmon cannery at Point Roberts in 1891, all the fishing of the county was confined to the period of the early run of salmon on their way to the Fraser. At that time the catch, of which no reliable report could be procured, was used locally, and sold to the canneries over the boundary line, on the Fraser River, and was much less than in 1891 and 1892.

During 1892 over three-fourths of the catch was taken by the 85 white men using purse seines and pound nets, and less than one-fourth by 100 Indian fishermen employing reef nets and gill nets. The reef net, of which a diagram and description were given in the previous report on the fisheries of this coast, is gradually going out of use, only 10 being used in 1892, against 20 in 1891. The proportional quantities of salmon taken with the different kinds of apparatus are as follows: Pound nets, two-tenths; purse seines, six-tenths; gill nets, one-tenth; reef nets, one-tenth. Silver salmon and skowitz or dog salmon are taken by purse seines and gill nets; sockeye or blueback salmon are

caught by pound nets, while all species are taken in small quantities in reef nets. The average gross weights of the different species of salmon taken at Point Roberts in 1892 were as follows: Blueback salmon, 7 pounds; silver salmon, 7½ pounds; dog salmon, 10½ pounds. The prices paid to the fishermen for these fish were 15 cents, 8 cents, and 6 cents, respectively.

The total quantity of salmon taken in 1891 was 625,885 pounds, and in 1892 1,043,500 pounds, all of which were caught and used in canning at Point Roberts.

SAN JUAN COUNTY.

This county consists of numerous islands lying midway between the island of Vancouver on the west and Skagit County on the east, in the direct line of migration of the large bodies of salmon on their way from the ocean to the Fraser River and other streams of the northwest coast. While the opportunities for commercial fishing for salmon and other fishes are regarded as extremely good, the fishing industry is insignificant. On Waldron Island some attention was given to the taking and smoking of herring during the years 1891 and 1892, several hundred thousand pounds of raw material being utilized annually. After being smoked the fish are packed in small boxes holding 5 or 6 pounds, and find a ready market in the cities of the Pacific Coast.

THE OYSTER BUSINESS OF PUGET SOUND.

Native oyster beds are abundant in Mason and Thurston counties, the beds in Mason County being in Oakland Bay, Case Inlet, Totten Inlet or Oyster Bay, and Hood Canal, and those of Thurston County in Mud Bay near Olympia; all of these bodies of water are tributary to Puget Sound. During the past few years more attention has been given to the native beds of this region. The small seed oysters obtained from the cull have been planted, and starfish found on the beds have been destroyed. In all cases in which some care has been bestowed on the beds a gain in the output has resulted, while localities where the beds have received no attention have generally shown a decrease, some beds worked as late as 1889 now being abandoned. In past years starfish have been very destructive to the native beds of Puget Sound; of late the efforts to rid the beds of this injurious animal have been increased, and depredations have been almost entirely prevented. The beds are exposed at low tide, at which time the starfish are gathered by hand and with forks, and used on the land for fertilizer.

In taking oysters in the Puget Sound region tongs are but little used—in some instances not at all, the oysters being picked by hand at low tide, and carried to boats, where they are culled, small seed oysters and shells being returned to the beds.

Market oysters are sent to Olympia, Tacoma, Seattle, and other points, in sacks containing 115 pounds, equivalent to 2 bushels. Prices in 1889 were $3 per sack, and in 1891 and 1892 $2.50 per sack. The oyster season is from September 1 to May 1. Two sacks per day are considered a fair quantity to be taken by one man.

Considerable interest is being taken in the question as to whether eastern oysters will propagate or thrive in the waters of Puget Sound. It is reported that the experiment will soon be given a trial by planting a consignment of oysters from the East.

The extent of the oyster industry of Puget Sound in the years 1889 to 1892, inclusive, is shown in the following tables. The number of men engaged and the capital invested in this industry show little change from year to year, although there has been a slight increase in the quantity of products, with a reduction in their value. In addition to the persons shown in the table, there were perhaps as many more employed at odd times in connection with the industry, but their operations were too brief to entitle them to mention in the tables. In addition to the quantities of oysters given for Mason and Thurston counties, about 10,000 bushels are taken annually from these counties by fishermen living at Tacoma, to which place their catch is credited.

In 1892 small beds of a bivalve mollusk (*Placunanomia macroschisma*) of no economic value were found between Tacoma and Seattle. Considerable attention was given to this discovery, because of the extensive notices in the press. By the newspapers the shellfish were almost invariably designated as valuable beds of eastern oysters. Their shells were about the size of a medium eastern oyster. The soft part of most of them was of a bright red color, resembling fresh meat rather than shellfish. The Indians of the sound have long been familiar with these mollusks, and report them as good for food at certain seasons and as poisonous at other times. No experiments as to their value for food were made by the whites, and the beds remain undisturbed.

Persons employed in the oyster industry of Puget Sound.

Counties and countries.	Nativity.	Nationality.
Mason:		
United States	40	45
United States (Indians)	11	11
China	8	8
France	5	.....
Total	64	64
Thurston:		
United States (Indians)	12	12
Grand total	76	76

Boats, apparatus, shore property, and cash capital employed in the oyster industry of Puget Sound.

Items.	Mason.		Thurston.		Total.	
	No.	Value.	No.	Value.	No.	Value.
Boats	a78	$1,560	b25	$750	103	$2,310
Tongs	43	172	10	40	53	212
Floats	40	2,000	5	250	45	2,250
Shore property	.....	1,000	.....	.....	.....	1,000
Cash capital	.....	5,000	.....	.....	.....	5,000
Total	161	9,732	40	1,040	201	10,772

a Rowboats. *b* Canoes.

Product of the oyster industry of Puget Sound.

Years.	Mason.		Thurston.		Total.	
	Bushels.	Value.	Bushels.	Value.	Bushels.	Value.
1889	25,000	$37,500	1,200	$1,800	26,200	$39,300
1890	25,400	38,100	1,280	1,920	26,680	40,020
1891	26,000	39,000	1,920	2,880	27,920	41,880
1892	26,280	32,850	2,200	2,750	28,480	35,600

ALASKA.

GROWTH OF THE FISHING INDUSTRY.

Until a few years ago the wonderful fishery resources of Alaska were little known except to the natives of the country. Attention was called to this distant portion of the United States by Dr. Tarleton H. Bean, of the United States Fish Commission, in the report of the Commission for 1880. This report was extensively copied and was read with great interest, and its accounts of the wonderful abundance of salmon and other fish were by many received with doubts similar to those entertained two hundred and fifty years before regarding the reports carried to Europe as to the abundance of fish off the New England coast. Time has proved that the statements of Dr. Bean were quite moderate and fully reliable. Notwithstanding the great abundance of fish in Alaskan waters, the total value of the fish utilized in 1880 by others than natives was shown to have been insignificant.

Soon after attention had been called to Alaska and its resources by the United States Fish Commission, many persons engaged in the salmon business on the Columbia and other coast rivers gave the subject of Alaskan fisheries careful consideration. Although the fish were very abundant, the great distance of the grounds and the expense necessary to establish a plant there were considered to involve too great a risk to warrant the inauguration of fisheries. The first experiment having proven a financial success, the doubtful watchers, slowly at first and later with more eagerness, followed, until at the present time it will be seen that over half of the aggregate pack of salmon in the United States and nearly half of the pack of the entire world comes from Alaska.

The large area, and the wide distances between inhabited stations of this vast domain, render the gathering of complete general and statistical information a matter of much time, difficulty, and expense. Fortunately, so far as the fisheries are concerned, the various fishing firms in Alaska have their home stations and headquarters at San Francisco, or in Washington and Oregon, and can be reached with comparative ease. The instructions to the writer on his last investigation of the fisheries of the Pacific Coast in 1892 called for such statistical information regarding the Alaskan fisheries as could be procured without visiting that Territory. Each of the headquarter offices, as previously mentioned, was visited, and through the courtesy of the

proprietors and officers complete and accurate information was obtained directly from the books of every salmon cannery in Alaska, without one dollar of extra expense to the Government.

With the exception of the considerable quantities of fish caught and consumed in Alaska by the natives, the accompanying tables represent the entire food-fish fisheries of Alaska. The waters of that region, however, abound in many varieties of fine food-fish to which scarcely any attention has been given. San Francisco firms engaged in the cod fishery procure their catch on the extensive fishing banks just off the shores of Alaska, on which they have several stations. Their catch will be found in the statistical tables of California, and the two vessels in the same business from Washington will be credited to that State.

STATISTICS OF THE INDUSTRY.

The following tables show, for the years 1889 to 1892, inclusive, the extent of the fisheries of Alaska. The figures relate to persons employed; vessels, boats, apparatus, etc., used; and the quantity and value of the catch:

Persons employed in the fisheries of Alaska.

How employed.	1889.	1890.	1891.	1892.
In vessel fisheries	283	310	321	331
In shore fisheries	1,442	1,678	1,820	1,020
On shore, in canneries, etc	2,497	2,668	2,806	1,533
Total	4,222	4,656	4,947	2,884

Vessels, boats, apparatus, shore property, and cash capital employed in Alaska fisheries.

Designation.	1889		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Vessels	33	$433,000	36	$504,500	39	$532,500	40	$461,000
Tonnage	6,710		6,860		6,923		8,023	
Outfit		26,400		29,900		32,950		33,400
Boats	722	131,175	793	138,200	809	148,175	421	63,575
Apparatus:								
Seines	105	45,225	124	55,425	127	55,000	69	27,025
Gill nets	478	51,650	510	55,650	590	60,850	243	28,750
Pound nets	20	17,200	24	20,200	25	21,000	16	13,200
Lines		3,350		5,650		5,350		4,050
Guns								500
Shore property		1,124,900		1,214,400		1,268,500		720,650
Cash capital		1,723,000		1,788,750		2,061,500		1,257,500
Total		3,555,900		3,812,675		4,185,825		2,609,650

Products of the fisheries of Alaska.

Species.	1889.		1890.		1891.		1892.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Cod	1,135,975	$28,453	1,166,002	$41,682	1,637,000	$40,925	2,219,835	$55,562
Herring	13,860,800	24,395	15,664,800	27,464	15,437,000	27,169	18,700,000	32,900
Salmon	50,917,220	1,500,496	55,444,820	1,630,281	69,071,040	2,031,552	42,231,500	1,219,973
Fur-seal pelts		a 1,077,478		b 267,750		c 217,408		d 107,573
Sea-otter pelts								e 2,220
Total	65,913,995	2,630,822	72,215,622	1,967,177	86,145,040	2,317,054	63,151,335	1,418,228

a Represents 102,617 skins.
b Represents 21,000 skins.
c Represents 13,588 skins.
d Represents 7,175 skins.
e Represents 18 skins.

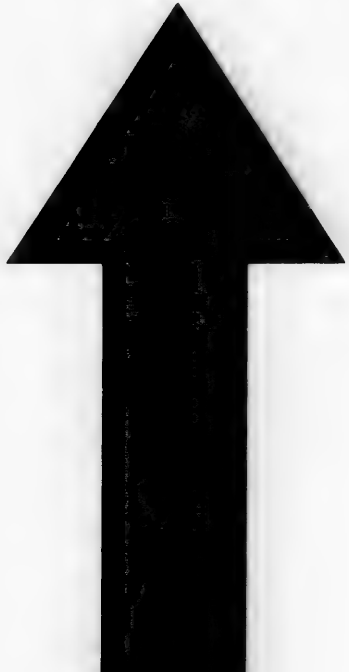
THE SALMON INDUSTRY.

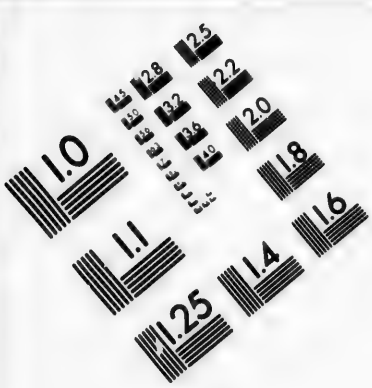
Brief notice has been made of the first canning of salmon in Alaska, of its success, and of the rush to this new region of those previously engaged in the business in other sections. The number of canneries in the Territory increased up to 1891, when the business reached high-water mark; the number of canneries in operation was 33 and the pack was 808,908 cases. This large amount of canned salmon, added to the customary yearly pack of the Columbia and other rivers, could have but one result, that of an overstocked market that at once necessitated a curtailing of operations. Salmon continued in great abundance in Alaskan waters, and it was apparent that the running of the 33 canneries to their full capacity would result in great pecuniary loss. Twenty-seven of the canning firms consequently decided to largely diminish expenses and reduce the amount of the pack in 1892, and in future years, so far as possible, to limit the production to the probable demand of the trade. This was accomplished by the firms mentioned pooling their business and closing 18 canneries that had run in 1891; the others, with those not entering the combine, made the number of factories operated in 1892 only 15. The pack in 1892 was 468,970 cases.

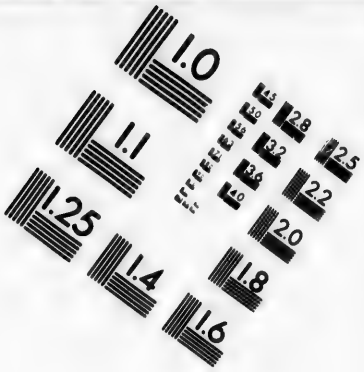
The principal salmon used in the canning business in Alaska are the small red-meated fish, locally known as red salmon, which has an average weight of 7 pounds, and the larger king or chinook salmon, which averages 30 pounds. In packing a case of 48 one-pound cans, the average number of red salmon required is 12, and of king salmon 2¾. This is a much larger average than obtains at the canneries in the Pacific States, where the fish are less abundant and more valuable. The great abundance of these fish in Alaska results in the use of only the choicest parts and in the loss or waste of large quantities of products which otherwise would be utilized.

The extent of the salmon fishery of Alaska and of the canning and salting industry dependent thereon is given in the following tables. It appears that in 1892 2,601 persons were engaged in the industry, that $2,184,303 was invested, that 37,534,100 pounds of salmon were utilized at the canneries in the preparation of 468,970 cases of canned fish and 55 barrels of salt salmon, the manufactured products having a value of $1,970,110. For reasons already given, the business was much less extensive in 1892 than in any of the other years under consideration. The canneries not operated in the years shown represent a very large investment which does not appear in the statistics. Only the property actively employed is noticed.

The business of salting salmon, as a branch of the fishing industry independent of the salting done at the canneries, is quite important and is yearly increasing in extent. About a dozen firms, located in various parts of Alaska, engaged in salting salmon in 1892, utilizing 4,697,400 pounds of fresh fish and preparing 15,658 barrels of salt salmon, having a value of $125,264. In the following year 5,871,600 pounds of raw material were consumed in the production of 19,572







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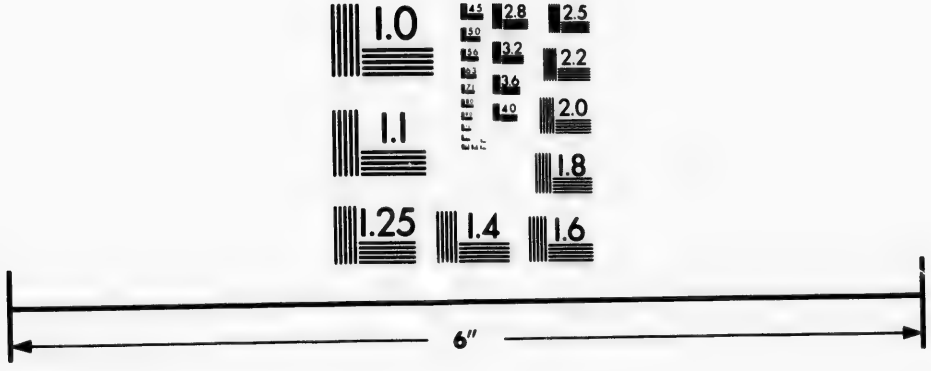

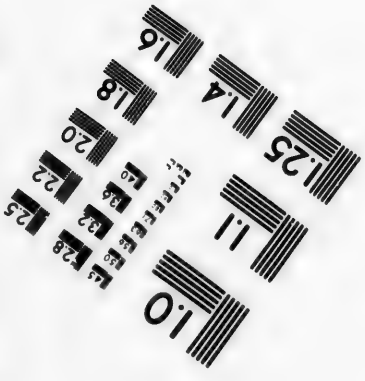

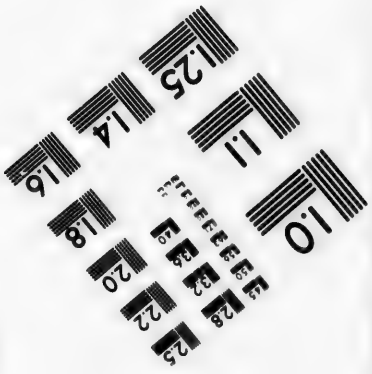

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barrels of salt fish worth $156,576. The persons employed in this branch of the salmon industry and the capital invested therein are included in the figures given in the preceding paragraph and in the tables which follow.

Persons employed in the salmon industry of Alaska.

Years.	On vessels.	In shore fisheries.	On shore.	Total.
1889	252	1,324	2,397	3,973
1890	279	1,533	2,568	4,380
1891	290	1,557	2,706	4,553
1892	288	880	1,433	2,601

Vessels, boats, apparatus, shore property, and cash capital employed in the salmon industry of Alaska.

Items.	1889.		1890.		1891.		1892.	
	No.	Value.	No.	Value.	No.	Value.	No.	Value.
Establishments	36	$914,903	39	$908,903	42	$1,050,403	25	$503,403
Cash capital	.....	1,538,000	.....	1,603,750	.....	1,891,500	.....	1,117,500
Vessels	28	*a*413,000	31	*a*488,000	34	*a*518,500	34	*a*441,500
Tonnage	6,552.42	.....	6,701.80	.....	6,765.24	.....	8,421.48	.....
Boats	680	127,075	732	132,275	748	142,250	365	58,025
Seines	96	40,125	113	49,325	118	49,900	60	21,925
Gill nets	478	51,650	510	55,650	590	60,850	243	28,750
Trap nets	20	17,200	24	20,200	25	21,000	16	13,200
Total	.....	3,101,953	.....	3,348,103	.....	3,734,403	.....	2,184,303

a With outfit.

The vessels shown in the foregoing table are employed about the stations or are engaged in transporting supplies to the canneries and the prepared products to the markets. Many are of large size, and are among the finest vessels employed in the United States in connection with the fisheries. They are mostly steamers, but there are also ships, barks, and schooners. The largest sailing vessel is a ship of 1,158.30 tons, and the largest steamer has a tonnage of 449.64. These two vessels carry crews of 30 and 14 men, respectively. The aggregate tonnage of this fleet in 1892 was 8,421.48, the value of the vessels was $441,000, and the crews numbered 288. The following table relates to the vessels employed in this capacity from 1889 to 1892, inclusive. A number of steam launches of less than 5 tons burden, used at the canneries, are classed as boats and do not appear in the table.

Vessels engaged in the salmon industry of Alaska.

Years and rigs.	No.	Net tonnage.	Value. (*a*)	No. of crew.	Years and rigs.	No.	Net tonnage.	Value. (*a*)	No of crew.
1889—Steam	18	1,041.91	$268,500	106	1891—Steam	25	1,290.95	$378,000	148
Sail	10	5,510.51	144,500	146	Sail	9	5,474.29	140,500	142
Total	28	6,552.42	413,000	252	Total	34	6,765.24	518,500	290
1890—Steam	22	1,227.51	347,500	137	1892—Steam	23	1,062.63	315,500	129
Sail	9	5,474.29	140,500	142	Sail	11	7,358.85	126,000	159
Total	31	6,701.80	488,000	279	Total	34	8,421.48	441,500	288

a Includes outfit.

Products of the salmon industry of Alaska.

Years.	Salmon canneries.						Salmon salteries.			
	Salmon utilized.		Salmon canned.		Salmon salted.		Salmon utilized.		Salmon salted.	
	Pounds.	Value.	Cases.	Value.	Bbls.	Value.	Pounds.	Value.	Bbls.	Value.
1889....	48,213,120	$1,446,394	599,394	$2,996,970	872	$6,976	2,705,100	$54,102	9,017	$72,136
1890....	52,138,520	1,564,156	641,449	2,629,491	2,742	21,936	3,306,300	66,125	11,021	88,168
1891....	65,013,240	1,950,397	808,908	3,235,632	1,002	8,016	4,057,800	81,155	13,526	108,208
1892....	37,534,100	1,126,023	468,970	1,969,674	55	440	4,697,400	93,950	15,658	125,264
1893....	51,725,060	1,551,752	636,427	2,863,921	2,703	21,624	5,871,600	117,432	19,572	156,576

The names of the salmon-canning firms in Alaska and the location of the canneries are shown for four years in the following list, the cross-marks indicating the years in which the canneries were operated:

List of Alaskan salmon canneries operated in 1889, 1890, 1891, and 1892.

Name of cannery.	Location.	1889.	1890.	1891.	1892.
Astoria Packing Company	Kuiu Island	.....	×	×	.....
Alaska Packing Company	Nushagak River	×	×	×	×
Arctic Packing Company	Uyak	×	×	×	.....
Do	Bristol Bay	.....	.....	×	.....
Do	Alitak	×	×	×	×
Do	Cook Inlet	×	.....	×	.....
Aleutian Island Fishing and Mining Company	Karluk	×	×	×	.....
Alaska Salmon Packing and Fur Company	Loring	×	×	×	×
Alaska Improvement Company	Kadiak	×	×	×	×
Aberdeen Packing Company	Wrangel	×	×	×	.....
Boston Fish and Trading Company	Yes Bay	×	×	×	×
Behring Sea Packing Company	Ugashik	.....	.....	×	.....
Bristol Bay Canning Company	Bristol Bay	×	×	×	×
Baranoff Packing Company	Baranof Island	×	×	×	×
Central Alaska Company	Thin Point	×	×	×	.....
Chilkat Packing Company	Chilkat River	×	×	×	.....
Chilkat Canning Company	do	×	×	×	×
Chignig Bay Packing Company	Chignig Bay	×	×	×	×
G. W. Hume	Cook Inlet	.....	×	×	×
Hume Packing Company	Karluk	×	×	×	×
Karluk Packing Company	do	×	×	×	×
Kadiak Packing Company	do	×	×	×	.....
Do	Alitak	.....	×	×	.....
Metlakahtla Mission	Clarence Strait	.....	.....	×	×
North Pacific Trading and Packing Company	Klawak	×	.....	×	×
Northern Packing Company	Cook Inlet	×	×	×	.....
Nushagak Canning Company	Bristol Bay	×	×	×	.....
Pacific Packing Company	Copper River	×	×	×	.....
Pacific Steam Whaling Company	do	×	×	×	.....
Peninsular Trading and Fishing Company	do	×	×	×	.....
Pyramid Harbor Packing Company	Pyramid Harbor	×	×	×	×
Royal Packing Company	Afognak	×	×	.....	.....
Russian-American Packing Company	do	×	×	×	.....
Thin Point Packing Company	Thin Point	×	×	×	.....
Total		28	30	33	15

Mr. A. B. Alexander, fishery expert on the United States Fish Commission steamer *Albatross*, makes the following remarks on the business of salting salmon in Alaska:

The demand for salt salmon is yearly increasing. A few years ago there was but little call for it, probably owing to the fact that little effort was made on the part of those engaged in the business to introduce it in the East. Seeing the absolute necessity of taking steps to place their products on the eastern market in order to increase the demand and establish a trade for salt-cured salmon, efforts have been pushed in that direction, and the encouragement met with has induced many who had not the means or desire to enter into the expensive business of canning salmon to establish salmon salteries in various parts of Alaska.

The amount of capital required to start on a small scale in this business is not

large. One or two boats fitted with drag seines, a cabin on shore for living quarters, a rough shed or fish house in which to dress and salt the fish and for performing such general work as may be required in a limited business of this kind, will suffice for all purposes. Many of the well-established salteries were first started in this manner and have since grown to be of considerable importance. Two or three men with only a small amount of capital, if they are fortunate in selecting a good locality where the run of salmon can be relied upon—for the success of the entire business depends upon the location—can, if they display the required amount of energy, build up a paying business. They of course must appreciate the fact that at least for seven months out of the year they must content themselves with being cut off and isolated from civilization, but the class of men who seek a livelihood in this remote part of the world care little for social life, or, if so, the prospect which looms up before them for making money is fully equivalent to any hardships of this nature they may undergo.

Several small vessels manned by men of small means have, during the past few years, made annual voyages to Alaska, spent the fishing season there, and in the fall brought back the summer's catch. At first they temporarily located themselves by way of an experiment where it was thought to be a good position for carrying on the business. If the experiment proved a success, the next year greater preparations were made, and in this way from a small beginning quite a number of valuable plants have been established.

The greater part of the salmon put up at the salteries are caught in drag seines, although a few are taken in gill nets and traps, but at most places where salteries are situated the drag seine has been found to be the most profitable apparatus of capture, owing to the great number of smooth beaches where the fish can be easily taken. There are, however, numerous bays, channels, and straits in Alaska where the purse seine could be used to advantage. The reason why this style of net has not been adopted in places where it can be used is because the fishermen of the coast are not experienced in handling it. In 1893 a mackerel purse seine was for the first time used at Tongas Narrows, in southeastern Alaska. Previous to the introduction of this seine the drag seine had always been used. Mr. Clarke, one of the owners of the saltery established here, says that after a season's trial he has come to the conclusion that the purse seine is superior to the drag seine, and during the next season he intends to employ several of them. The secret of Mr. Clarke's success in fishing for salmon with a purse seine is in his knowledge of using it, which was gained by nearly twenty years' experience in the mackerel and other fisheries in New England. Seeing no reason why salmon could not be caught in the same manner as mackerel in places where the bottom and general surroundings were favorable, he sent East for enough twine to make a seine 150 fathoms long, 17 fathoms deep in the bunt, and 14 fathoms on the wings, the size of the twine being 9 and 12 thread. It will be observed that this seine is considerably deeper in proportion to its length than the ordinary mackerel seine. The reason for this extra depth is that salmon, when they find themselves surrounded by twine, will, like mackerel, dive, but, as a rule, they will only go down from 12 to 14 fathoms. By having the seine several fathoms deeper than they generally dive, a school, when once surrounded, is pretty sure of being caught. Mr. Clarke says he did not lose a single school during the summer.

The attempt to catch the salmon in this manner being only an experiment, everything connected with the new method, except the seine, was crude. A seine boat had to be built and the crew to man it drilled. The boat was manufactured on the spot by men connected with the fishing station.

Mr. Clarke finds this method a much more economical way of fishing than with drag seines. The bottom about Tongas Narrows is very rocky and drag seines are frequently torn to pieces. This involves a great deal of labor in keeping them in repair, and besides the expense amounts to considerable during the season. There being plenty of water here where the fishing is carried on, the purse seine never comes in contact with the bottom, and the hardest usage it gets is the natural wear and tear from handling.

Two purse seines have been used for several years at Yes Bay. One is 300 fathoms long and 17 fathoms deep in the bunt, and the other is about 100 fathoms long. The larger one is used more frequently and is set from a small steamer. The superintendent of the saltery at that point says it works all right when he can get men who know how to handle it. Purse seines have also been in use for two seasons at Metlakáhtla, and with very good success.

Employes at the salteries have, heretofore, been paid by the month, but a few salters during the past season gave their men a lay. Sixty dollars a month for white fishermen and $1 a day for native help have been the established wages. It is fast becoming the custom to pay so much per barrel to white fishermen for all salmon caught. At all places where this system has been tried it has given satisfaction to both fishermen and owners. Ten cents a barrel is the lay received. In all fishing communities where fishing is performed on a lay much better results follow than where stipulated wages are given. The constant expectation of good catches stimulates the men with energy which wages have not the power to bring out. The fishermen know that what benefits the proprietors likewise helps them.

All barrels used for putting up salmon in southeastern Alaska are manufactured at the salteries. Suitable wood being abundant, they can be made at a reasonable price. During the winter months enough barrels are made to meet the demand for the coming season. A cooper is an indispensable person about a salmon saltery, for, besides performing his regular duties as a cooper, he is often called upon to assist in various mechanical jobs, and is paid by the piece, or so much per barrel—85 cents for making a whole barrel and 65 cents for a half barrel. At this price he can earn good wages, for he is under no expense for board.

It being the object of every man owning a saltery to enlarge on the plant and increase his business as rapidly as possible, several weeks of each year, before and after the fishing season, are spent in building wharves if needed, erecting buildings, and making such improvements as are required to keep a place of this kind in good order.

Many salmon salters have gained a firmer foothold in Alaska than the mere business of salting salmon would give them. They have branched out into general trade, and have stores well stocked with goods of all kinds. In this way they have drawn around them the neighboring tribes of Indians who are ever ready to buy and trade for such commodities as they require. The result of barter and trade with the Indians has been to annually fill the stores with large collections of furs. Bear, fox, and deer skins are chiefly dealt in, the most of which are shipped direct to San Francisco.

MANUFACTURE OF HERRING OIL AND GUANO.

According to the report of Mr. Paul S. Luttrell, special agent of the Treasury Department for the protection of the salmon fisheries of Alaska, a herring fishery of some magnitude was carried on in 1892 at Killisnos, Alaska, by the Alaska Oil and Guano Company. While a considerable quantity of herring was preserved by salting, the chief feature of the business was the manufacture of oil and fertilizer. One hundred and twenty-two persons were employed in various capacities, of whom 93 were in the oil works and 29 on steamers engaged in fishing. Of the factory employes 47 were whites, 4 were Chinese, and 42 were natives. Four steamers, of 60, 42, 23, and 4 tons, respectively, were used. The value of the property and improvements was $100,000.

During the year 93,000 barrels of herring were taken, from which the following were prepared: 500 half barrels of salt herring, 1,000 barrels of salt herring, 316,000 gallons of oil, 700 tons of guano. The oil, the price of which at the trade centers was 25 to 35 cents a gallon, had an aggregate value of $85,000. The value of fertilizer was $21,000, or $30 a ton.

THE ATKA MACKEREL.

The few persons who are familiar with this fish pronounce it one of the best of the numerous food-fishes found in the waters of Alaska. Its name is misleading in that the fish has no relation to the mackerel family and does not resemble it in looks or flavor. While found at numerous places in Alaskan waters, it has so far been observed most plentifully around the far-distant island of Attu. This island is the outer one in the Aleutian chain, and is the most western land belonging to the United States. It is so far west that it might, with almost equal propriety, be called east, being nearer the Asiatic shore than to any other mainland. San Francisco vessels engaged in trading or seal hunting have from time to time brought back larger or smaller quantities of salted Atka mackerel, usually taken in the vicinity of Attu. One of these vessels, the schooner *Rosa Sparks*, of 42.11 tons, with a crew of 20 men, which was engaged during the season of 1891 in fishing and sealing, returned with 148 seal skins and 324 barrels of Atka mackerel. The latter found a ready sale at $15 a barrel. The captain of the vessel, Mr. S. L. Weatherbee, reports that his catch was made at Attu Island, and furnishes the following statements on the subject:

Atka mackerel are reported by the natives as remaining in the vicinity of Atka all winter, but do not reach Attu before April 10, from which date up to September they are found among the kelp in great abundance. Up to July they are very fat and in their best condition. The spawning season is in July, at which time they grow thin and poor. The fish are taken in 25 fathoms of water by jigging, no bait being required. Three or four hooks are fastened together and placed in a mold, into which lead, pewter, or some similar composition is run, welding the hooks together and leaving a shank that is polished up brightly to attract the fish; this also serves as a sinker. These lines and hooks are put down through the kelp, amidst which the fish are feeding. Being attracted by the bright metal, to which the hooks are attached, they swim around it in such numbers that their capture is easy by simply drawing the hooks up through them, and repeating the act so long as a catch is desired. From 8 to 10 barrels a day have been taken by two men in a single dory. Cod follow the Atka mackerel to this place to feed on them. The few Atka mackerel that have occasionally reached San Francisco are always eagerly sought after, and some fish have been sold at $20 a barrel. Seines or nets of any kind could not be used to advantage, owing to the abundance of the large kelp among which the fish are always found.

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